

***Exhibits to Consent Decree
10 Broad Street
Seattle, Washington***



***Prepared for
Seattle Art Museum and
Museum Development Authority***

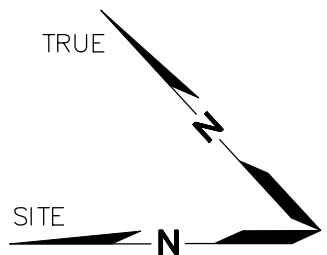
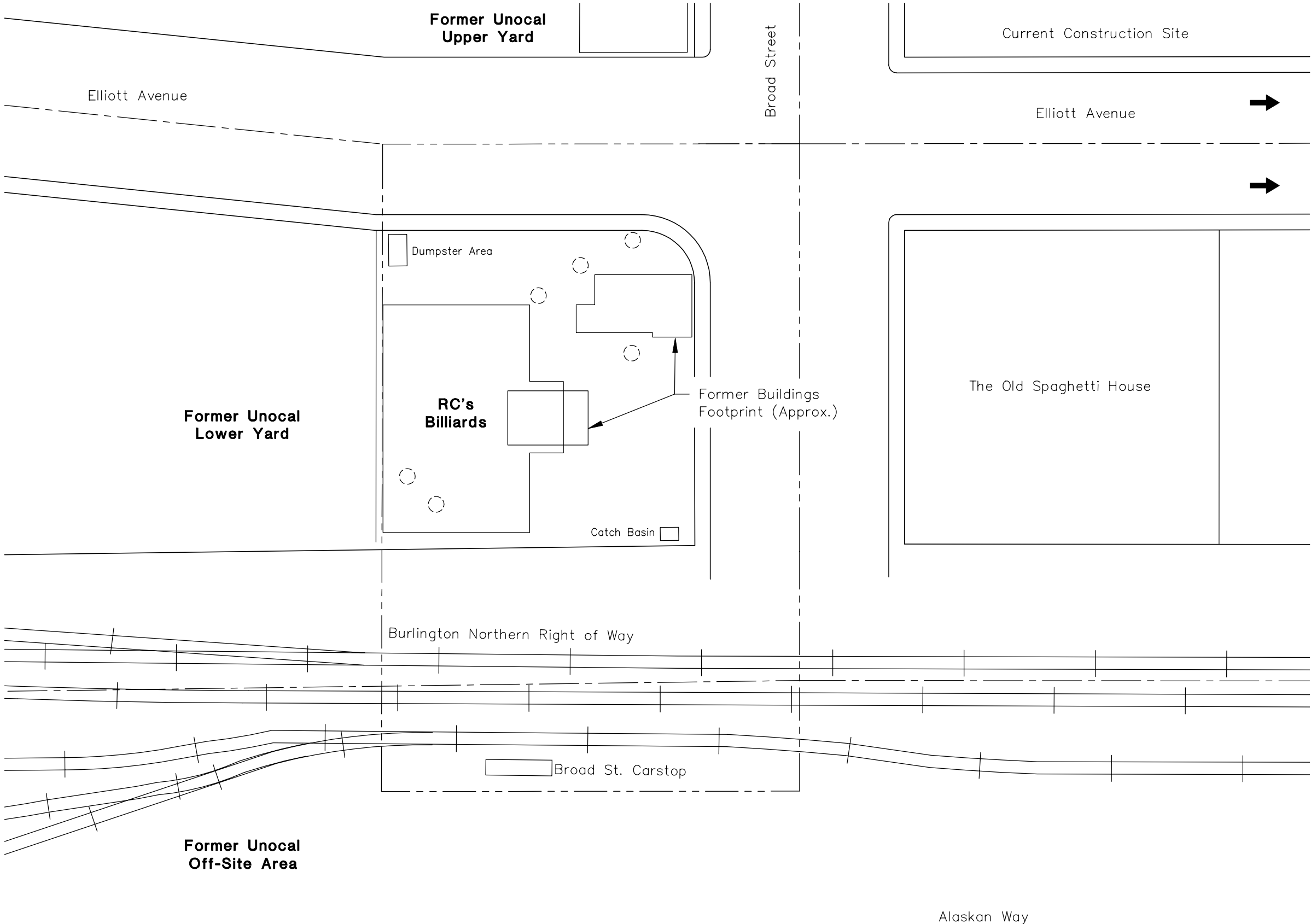
***March 28, 2001
J-7018-01***

Exhibit A
Site Diagram
10 Broad Street Property
Seattle, Washington

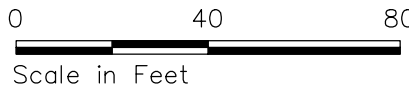
Prepared by
Seattle Art Museum

March 23, 2001

Site Plan



- Approximate Former Tank Location
- Approximate Property Boundary



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EXHIBIT B
CLEANUP ACTION PLAN
10 BROAD STREET
SEATTLE, WASHINGTON

CONTENTS	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	1
<i>2.1 Historical Site Use</i>	1
<i>2.2 Planned Site Use</i>	2
3.0 PREVIOUS CLEANUP ACTIONS	2
4.0 CURRENT SITE CONDITIONS	2
<i>4.1 Hydrogeologic Setting</i>	2
<i>4.2 Soil, Groundwater, and Air Quality</i>	3
5.0 CLEANUP OBJECTIVES AND CRITERIA	5
<i>5.1 Remedial Action Objectives (RAOs)</i>	5
<i>5.2 Indicator Hazardous Substances</i>	5
<i>5.3 Cleanup Levels</i>	5
6.0 SUMMARY OF REMEDIAL ALTERNATIVES	8
7.0 SELECTED CLEANUP ACTION	9
<i>Field Investigation</i>	9
<i>Excavation and Backfilling</i>	9
<i>Groundwater Management</i>	10
<i>Runoff and Erosion Control</i>	11
8.0 COMPLIANCE MONITORING	11
<i>8.1 Points of Compliance</i>	13
9.0 SCHEDULE	13
10.0 INSTITUTIONAL CONTROLS	13
11.0 WORK CONSTRUCTION	14
12.0 DETERMINATIONS	14
<i>12.1 Protect Human Health and the Environment</i>	14
<i>12.2 Compliance with Cleanup Standards per WAC 173-340-700 through -760</i>	14

CONTENTS (Continued)

Page

12.3 Compliance with Applicable State and Federal Laws per WAC 173-340-710	15
12.4 Provide Compliance Monitoring per WAC 173-340-410	15
12.5 Use Permanent Solutions to the Maximum Extent Practicable per WAC 173-340-360(4), (5), (7), and (8)	15
12.6 Short-Term Effectiveness	15
12.7 Long-Term Effectiveness	16
12.8 Permanent Reduction of Toxicity, Mobility, or Volume	16
12.9 Ability to be Implemented	16
12.10 Cleanup Cost	17
12.11 Consider Public Concerns per WAC 173-340-600	17
13.0 REFERENCES	17

TABLES

1 Proposed Cleanup Criteria for Detected Constituents in Soil and Groundwater	19
2 Proposed Cleanup Levels for Constituents of Potential Concern in Air	20

FIGURES

1 Vicinity Map
2 Site Plan
3 Summary of Soil Quality Data
4 Summary of Groundwater Quality Data
5 Soil Sampling Location Plan
6 Excavation and Natural Attenuation Alternative

APPENDIX A

RAOULT'S LAW INTERIM TPH POLICY WORKSHEETS

EXHIBIT B
CLEANUP ACTION PLAN
10 BROAD STREET
SEATTLE, WASHINGTON

1.0 INTRODUCTION

This Cleanup Action Plan (CAP) describes remedial actions that will be performed on the property located at 10 Broad Street in Seattle, Washington (Figure 1). This CAP was prepared on behalf of the City of Seattle (City), the Museum Development Authority (MDA), and the Seattle Art Museum (SAM). The City, MDA, and SAM intend to enter into a Prospective Purchaser Agreement with the Washington State Department of Ecology (Ecology) pursuant to the MTCA, RCW 70.105D.040(5).

This document was prepared in general accordance with requirements listed in the Washington State Model Toxics Control Act (MTCA - WAC 173-340-360). Additional information on the environmental conditions at the site and a discussion of cleanup alternatives are presented in the Remedial Investigation/Feasibility Study (RI/FS), dated January 29, 2001.

2.0 SITE DESCRIPTION

The 10 Broad Street property is located at the northwest corner of Elliott Avenue and Broad Street along the northern end of the waterfront business district (Figure 1). The rectangular property covers a total area of approximately 13,790 square feet and contains an approximately 4,010-square-foot building (Figure 2). RC's Billiards Sports Bar and Grill currently occupies the existing building, which was built around 1976. The remainder of the property is paved or covered with decorative landscaping. The property slopes westward toward Elliott Bay.

The property is bounded to the north by the former Unocal Marketing Terminal (Terminal), to the east by Elliott Avenue, to the west by the Burlington Northern Railroad (BNRR) right of way, and to the south by Broad Street.

2.1 Historical Site Use

Historical records indicate three general periods of site use:

- ▶ **Before 1916 - Residential.** In the early 1900s, several residences were located on the property.

- ▶ **1916 to 1975 - Welding and Automotive Service.** From approximately 1916 to 1973, the site was used for welding and/or automobile service operations. Several underground storage tanks (USTs) were present on the property, most in the southeastern corner of the site. Six USTs were to be removed as part of site redevelopment in 1975, but records documenting the removal have not been located.
- ▶ **1976 to Present - Restaurant.** In 1976, the existing building was constructed. Shakey's Pizza operated a restaurant at the site until the mid-1990s when the current tenant, RC's Billiards, began operations.

2.2 Planned Site Use

In October 2000, SAM entered into a purchase and sale agreement with Larmar, Inc., Marlene Ivy, and Fortune Real Estate Investments, Inc. for the purchase of the 10 Broad Street property. SAM, in partnership with the City and the MDA, intends to create a public sculpture park on the property and the adjacent site of the former Unocal Terminal. The sculpture park will include sculptures, pedestrian trails, and landscaped open space. The 10 Broad Street site will provide safe pedestrian access between the sculpture park and the public waterfront. At this time, there are no plans to install permanent heated building structures on the 10 Broad Street property.

3.0 PREVIOUS CLEANUP ACTIONS

Six USTs likely related to automotive service and/or welding operations were planned to be removed in 1975 during site redevelopment. Records documenting this removal have not been located. No other cleanup actions are known to have occurred at the site.

4.0 CURRENT SITE CONDITIONS

4.1 Hydrogeologic Setting

The site is located in the Puget Sound Lowland physiographic province of Washington State on a southwest-facing hillside along Elliott Bay. Soils beneath the site to a depth of approximately 10 to 15 feet are predominantly silty sand and silt fill materials with occasional brick or wood debris. Underlying the fill layer are beach sands (primarily on the western half of the site) and sandy or silty sandy outwash deposits to an approximate depth of 25 feet. Very dense glacial till underlies the outwash.

Unconfined groundwater is encountered in the fill unit throughout most of the site at depths ranging from 10 to 15 feet. Groundwater generally flows to the west or northwest toward Elliott Bay except during periods of high tide, when flow is temporarily reversed. The net groundwater flux is toward Elliot Bay.

4.2 Soil, Groundwater, and Air Quality

This section summarizes the environmental conditions that currently exist at the property. Our understanding of existing site conditions is based on environmental data from investigations performed both on the property and on the adjacent property, the former Unocal Marketing Terminal. A more detailed discussion of current environmental conditions is presented in the RI/FS.

Soil Quality

Detected soil concentrations of the following constituents exceed MTCA Method A cleanup levels:

- ▶ **Gasoline-Range Petroleum Hydrocarbons.** Soil containing elevated concentrations of gasoline-range petroleum hydrocarbons is present on the eastern half of the site (Figure 3). The occurrence of gasoline-range hydrocarbons is primarily limited to soils at depths of between 10 and 18 feet, but is also present in shallower soils in a small area near the southeast corner of the RC's Billiards building.
- ▶ **Diesel-Range Petroleum Hydrocarbons.** Soil containing elevated concentrations of diesel-range petroleum hydrocarbons is limited to a small area near the southeast corner of the RC's Billiards building, at depths of approximately 10 to 15 feet.
- ▶ **BTEX.** Soil containing elevated concentrations of benzene, ethylbenzene, and xylenes is generally collocated with elevated gasoline-range hydrocarbon concentrations. However, gasoline present in site soil is noticeably weathered and the lighter BTEX components are present at low concentrations or absent in several samples. Shallow soils above 8 feet in depth along the eastern boundary of the site and under Elliot Avenue generally did not contain gasoline-range hydrocarbons except for slightly elevated concentrations of BTEX compounds (Figure 3). The presence of BTEX compounds in this area is likely derived from vapors that migrated from the gasoline source area on the 10 Broad Street property toward the western edge of Elliott Avenue.

Groundwater Quality

Based on groundwater monitoring results collected in November 2000, groundwater at the site is in compliance with screening levels except at well MW-2, in which the gasoline-range hydrocarbon concentration (0.97 mg/L) slightly exceeded the surface water screening level of 0.8 mg/L (Figure 4). Petroleum hydrocarbon and BTEX concentrations observed during this recent sampling event were typically much lower than those observed during the Phase 2 investigations performed by GeoTech Consultants in June of 1988 and February of 1999. For example, gasoline-range hydrocarbon concentrations in wells MW-2 and MW-3 decreased from 19 and 1.6 mg/L to 0.97 mg/L and non-detect, respectively. The apparent decrease in groundwater hydrocarbon concentrations may indicate that significant natural attenuation is occurring.

No chlorinated solvents were detected in site groundwater at concentrations exceeding surface water cleanup levels.

Air Quality

Although air monitoring has not been performed on the site, soil gas and ambient air monitoring has been conducted on the adjacent Lower Yard site as part of the former Unocal Seattle Marketing Terminal Consent Decree field investigation. A number of gasoline-range hydrocarbon compounds were detected at concentrations exceeding Method B residential air cleanup levels in the soil gas samples including two probes (identified as HC-SV9 and HC-SV10) installed along the boundary between the Lower Yard and the 10 Broad Street site (Hart Crowser, 1999). Soil to air modeling results indicated that ambient air concentrations would not exceed MTCA Method B residential cleanup criteria. Ambient air monitoring conducted in the Lower Yard in June 2000 confirmed that hydrocarbons were not present at concentrations exceeding Method B cleanup criteria.

Soil to air modeling results indicated that indoor air in the southern portion of the Lower Yard and the 10 Broad Street property could be impacted due to the presence of 1,3-butadiene. The occurrence of butadiene, which is a low molecular weight (C_4) hydrocarbon present in trace quantities in fresh gasoline, may be the result of gasoline contamination on the 10 Broad Street site.

5.0 CLEANUP OBJECTIVES AND CRITERIA

5.1 Remedial Action Objectives (RAOs)

Cleanup actions to be implemented at the 10 Broad Street site are designed to address the following RAOs:

- ▶ **Prevent Direct Contact with Contaminated Soil.** Prevent direct contact with petroleum-impacted soils exhibiting concentrations above MTCA residential cleanup levels.
- ▶ **Protect Groundwater.** Address petroleum-impacted soil and groundwater to reduce gasoline-range hydrocarbon and benzene concentrations in groundwater to concentrations below MTCA surface water criteria and protect Elliott Bay and its sensitive ecosystem.
- ▶ **Prevent Potential Air Impacts.** Address petroleum-impacted soil and groundwater to prevent the migration of hydrocarbon vapors at concentrations that could cause exceedences of ambient or indoor air cleanup levels at the site or on adjacent properties.

5.2 Indicator Hazardous Substances

Indicator hazardous substances (IHSs) were identified for the 10 Broad Street site using the criteria outlined in WAC 173-340-708(2). The final list of IHSs for soil and groundwater are a subset of the contaminants detected at the site. The final soil IHSs are TPH-gasoline, benzene, ethylbenzene, and xylenes. The final groundwater IHSs are TPH-gasoline, TPH-diesel, and benzene. IHSs in air are based on soil gas sampling results on the adjacent Lower Yard site and include a number of gasoline-range hydrocarbons (Table 2).

5.3 Cleanup Levels

Soil and groundwater cleanup levels for the final IHSs were developed based on the proposed recreational land use of the site and the determination by Ecology that there is no current or planned future groundwater use as a drinking water source. The highest beneficial use of the site groundwater is protection of the adjacent surface waters and its ecosystems. Cleanup levels are designed to prevent petroleum vapors from adversely impacting ambient air, and to prevent elevated dissolved petroleum hydrocarbon concentrations in groundwater from migrating off site and adversely impacting adjacent properties.

The proposed cleanup action for the site was selected based on a comparison of each cleanup action alternative with the following criteria [WAC 173-340-360(2) and (3)] and consideration of the MTCA remedy selection requirements:

- ▶ Overall Protection of Human Health and the Environment;
- ▶ Compliance with Cleanup Standards;
- ▶ Use of Permanent Solutions to the Maximum Extent Practicable;
- ▶ Compliance with ARARs;
- ▶ Provision for Compliance Monitoring; and
- ▶ Provision for Reasonable Restoration Time Frame.

Soil

Proposed cleanup levels for soil are presented in Table 1 and are based on MTCA Method B residential soil cleanup levels for the direct contact pathway and Method A residential (unrestricted) cleanup levels for soil to groundwater and soil to air pathways. The direct contact cleanup level for non-carcinogenic petroleum hydrocarbons will be established based on fraction-specific hydrocarbon testing that will be performed during the pre-remedial field program. The hazard quotient for the direct contact pathway shall not exceed 1 under a residential exposure scenario using procedures outlined in WAC 173-340-740(3).

The soil to groundwater and soil to air cleanup level for gasoline-range hydrocarbons presented in Table 1 is based on the Method A criteria of 100 mg/kg. As noted in section 173-340-740(3)(b)(iii)(C) of the Adopted Amendments to the Model Toxics Control Act (dated February 2001), the soil to air pathway is generally not considered for diesel- and oil-range hydrocarbons given their low volatility. Method B soil to groundwater cleanup levels for diesel- and oil-range hydrocarbons are typically based on residual saturation criteria. Using the Raoult's Law equation presented in the Interim TPH Policy, diesel- and oil-range hydrocarbons will not cause exceedences of the 1 mg/L groundwater cleanup level via dissolution in either unsaturated- (dilution factor of 20) or saturated-zone (dilution factor of 1) soils. Diesel- and oil-range hydrocarbons exhibit very low aqueous solubilities and do not tend to impact groundwater quality in a dissolved form. Appendix A includes Raoult's Law spreadsheets of fresh diesel and bunker oil sample data obtained from a June 1998 report completed for Ecology entitled "Testing the Chemical Assumptions in the TPH Interim Policy for Protectiveness."

The soil to groundwater cleanup level for diesel- and oil-range hydrocarbons of 2,000 mg/kg presented in Table 1 was established using Ecology's conservative default residual saturation criteria for gravelly soils. Site-specific residual

saturation concentrations for diesel and oil products in site soils would likely be significantly higher (less stringent) due to the fine-grained nature of site soils relative to gravels.

Compliance groundwater and ambient air monitoring results will ultimately be used to evaluate compliance with soil to groundwater and soil to air pathways (Table 1). If confirmation groundwater monitoring results are in compliance with groundwater cleanup standards applied to the site for four consecutive quarters, site soil quality will be considered adequately protective of the soil to groundwater pathway. In the event that groundwater monitoring results indicate that contaminated groundwater exceeding surface water criteria is migrating off property and threatening the adjacent marine surface water body (Elliott Bay), and Ecology issues a written determination that contingency remedial actions are necessary, a remedial action plan will be developed to address soils exceeding residential soil cleanup levels.

Confirmation that soil hydrocarbon concentrations are protective of human health and the environment for the soil to ambient air pathway will be based on compliance with ambient air cleanup standards. If confirmation ambient air monitoring results are in compliance with air cleanup standards presented in Table 2 during the two post-remediation sampling events described in Exhibit F to the Consent Decree, site soil quality will be considered to be adequately protective of the soil to ambient air pathway.

Groundwater

Because site groundwater discharges into the adjacent marine surface water body and is not likely a current or potential source of drinking water due to elevated salinity, groundwater quality data are compared to Method B surface water criteria (including Washington State surface water quality standards – Chapter 173-201 WAC). Because there are no established Method A or B surface water criteria for total petroleum hydrocarbons (TPH), screening levels for TPH are based on Method A drinking water cleanup levels (Table 1).

Air

Cleanup levels for ambient and indoor air are based on MTCA Method B cleanup levels (Table 2). In cases where no Method B criteria are available, the Puget Sound Clean Air Agency (PSCAA) Acceptable Source Impact Levels (ASILs) were used. Since no Method B or PSCAA criteria have been established for TPH, Method B air cleanup levels were calculated for each of the petroleum equivalent carbon (EC) fractions identified in the draft revised MTCA regulations (dated August 2000).

Inhalation reference doses used to calculate Method B cleanup levels for these hydrocarbon fractions were obtained from "Ecology Guidance Calculation of TPH Human Health Direct Contact Cleanup Levels Using Default Compositions," which was presented to the Science Advisory Board by Steve Robb in January 1999. Since no inhalation reference doses were available for the EC 3 to EC 5 range and the EC 12+ range, no cleanup levels were calculated for these fractions.

6.0 SUMMARY OF REMEDIAL ALTERNATIVES

The Model Toxics Control Act (MTCA) requires at a minimum that all cleanup actions protect human health and the environment, comply with cleanup standards, comply with applicable state and federal laws, and provide for compliance monitoring. In the RI/FS, we presented the following alternatives:

- ▶ **Capping and Natural Attenuation.** A low permeability cap would prevent direct contact with impacted soils and minimize migration of petroleum vapors from the subsurface to ambient air. Natural attenuation would reduce soil and groundwater hydrocarbon concentrations over the long-term.
- ▶ **Air Sparging, SVE, and Natural Attenuation.** Air sparging and soil vapor extraction (SVE) would reduce TPH concentrations in site soils and groundwater. This alternative would also minimize migration of petroleum vapors to indoor and ambient air pathways, including addressing elevated benzene concentrations beneath Elliott Avenue.
- ▶ **Excavation and Natural Attenuation.** Excavation and off-site disposal of all accessible TPH-impacted soil would prevent direct contact and potential vapor impacts on the property. The presence of asphalt pavement would minimize direct contact exposures and potential vapor impacts from shallow benzene-impacted soil beneath Elliott Avenue. Natural attenuation would likely reduce residual TPH concentrations in soil and groundwater over the long-term.

In the RI/FS detailed evaluation, Air Sparging, SVE, and Natural Attenuation was selected as the most cost-effective remedial alternative. Since the feasibility study was produced, it was decided that **Excavation and Natural Attenuation** was the preferred alternative. The excavation alternative provides a shorter remediation time frame, more completely removes contamination, and minimizes the potential for having to implement contingency remedial actions.

The increased likelihood for requiring contingency remedial actions, performing additional monitoring, and applying institutional controls under the air sparging/SVE alternative makes it less cost effective and less practical to implement than the excavation alternative.

7.0 SELECTED CLEANUP ACTION

The RC's Billiards building is scheduled to be demolished in the Fall of 2001. After the building foundation and asphalt pavement are removed, a field investigation will be performed to determine the extent of contamination under the former building footprint. After determining the extent of contaminated soil, accessible soil exceeding cleanup levels for TPH or BTEX will be excavated and disposed of. The field investigation and excavation are described below.

Field Investigation

Eight soil borings will be advanced in the RC's Billiards building footprint after the building is demolished and the foundation is removed. Proposed boring locations are shown on Figure 5. Locations may be adjusted or additional borings may be performed based on the results of field screening, which is described below.

Soil samples will be collected continuously during advancement and will be screened in the field for the presence of volatile hydrocarbons using a portable photoionization detector (PID). A Hart Crowser field geologist will log the geology and stratigraphy of the boreholes and will document physical evidence of contamination encountered during drilling. Approximately two to three samples per boring (up to 24 samples) will be submitted for chemical analysis of gasoline-range petroleum hydrocarbons by Method NWTPH-G, BTEX compounds by EPA Method 8260, and diesel- and oil-range hydrocarbons by Method NWTPH-Dx. At least one representative sample will also be analyzed for fraction-specific hydrocarbons using the VPH/EPH test procedure. Results of this soil sampling program will be summarized in the remedial design report and will be used to plan the excavation.

Excavation and Backfilling

The estimated area and depth of the excavation required to remove TPH-impacted soil is shown on Figure 6. The eastern excavation boundary will be at the shoring wall along Elliott Avenue, which will be located as close as practicable to the edge of the sidewalk. The western, northern, and southern

boundaries of the excavation will be determined by the extent of contamination and by limitations arising due to sloping requirements. Soil containing TPH and BTEX above cleanup levels will be excavated and stockpiled on the adjacent Lower Yard property.

The excavation is expected to extend to a maximum depth of 18 feet based on data collected during the Remedial Investigation. North, west, and south side walls will be sloped at a grade of 2H:1V or as determined to be appropriate based on site conditions. The maximum expected depth is between 2 and 5 feet below the water table but will vary with the season, the tide and practicability considerations. The excavation will generally not be dewatered because groundwater in the excavation will act to minimize sloughing of clean soil from the sidewalls. However, limited dewatering may be performed to assist in excavating and shoring activities. If contaminated soil is encountered below 18 feet in depth, it will be removed to the extent practicable. To minimize the amount of soil removed below the water table, the excavation will be conducted during the dry season, and soil below 15 feet in depth will be removed only during periods of low tide to the extent practicable.

Since much of the soil in the planned area of excavation is expected to be below cleanup levels but will need to be removed to access underlying contaminated soils, excavated soil will be screened in the field for organic vapors with a PID and for petroleum odors and stains. Soil will be segregated in stockpiles based on field screening results. Samples from each stockpile will be analyzed for petroleum hydrocarbons (including NWTPH-G/BTEX and NWTPH-D extended). Soil below cleanup levels will be used as backfill if geotechnically suitable. Soil impacted with TPH and BTEX above cleanup levels will be transported to an Ecology-approved recycling or disposal facility.

When field screening indicates that soil above cleanup levels has been removed, sidewall and bottom verification samples will be collected and analyzed for petroleum hydrocarbons. Verification sampling is described in more detail in section 8.0. If verification sample results exceed site cleanup levels, additional soil will be excavated (if practicable).

Groundwater Management

Groundwater may be removed in limited quantities for the following purposes:

- ▶ To remove visible petroleum contamination, if more than a sheen is observed; or
- ▶ To aid in shoring or excavating below the water table if practicable.

Groundwater from the excavation will be collected in a temporary storage tank. Collected water will be chemically profiled and disposed of at an appropriate waste disposal facility.

Runoff and Erosion Control

Soil stockpiles will be covered to minimize precipitation contact and runoff. Soil excavated in the saturated zone will contain excess water unless dewatering is performed. Engineering controls such as berms, temporary visqueen covers, or other appropriate measures will be used to prevent runoff and erosion from stockpiles or other construction areas.

8.0 COMPLIANCE MONITORING

Compliance monitoring is performed to confirm that human health and the environment are protected during the construction, operation, and maintenance of the cleanup action. Compliance monitoring also confirms that the cleanup action has attained the cleanup standards prescribed by the cleanup plan and confirms the long-term effectiveness of the remedial action. Compliance monitoring at the site will be performed as follows:

- ▶ Protection monitoring will be implemented during construction by ensuring that site workers are appropriately trained in health and safety and that health and safety and contingency plans for encountering hazardous materials are available during construction. Impacted soils will be stockpiled with appropriate contact and runoff controls.
- ▶ Performance monitoring will be conducted during construction, which will include verification and stockpile sampling and analysis. Verification soil samples will be collected from the north, west, and south side walls of the excavation to confirm that remaining soils do not contain TPH or BTEX concentrations above cleanup levels. One shallow (in the 0- to 10-foot depth interval) and one deep (in the 10- to 20- foot depth interval, at the approximate top of the water table) sample will be collected for every 50 linear feet of side wall. Four bottom samples will be collected. Samples will be analyzed for petroleum hydrocarbons (including NWTPH-G/BTEX and NWTPH-D extended). If verification sample results exceed site cleanup levels, additional soil will be excavated (if practicable).

Contaminated soil will be transported off site to an Ecology-approved recycling or disposal facility. Excavated soil will be screened for organic

vapors with a PID, segregated in stockpiles, and characterized for disposal in accordance with the requirements of the treatment facility. Stockpile size will be limited to 500 cubic yards. Three characterization samples will be collected from stockpiles containing less than 100 cubic yards of soil and five characterization samples will be collected from stockpiles containing between 100 and 500 cubic yards of soil. Samples will be analyzed for BTEX and gasoline-, diesel-, and oil-range TPH. Soils below cleanup levels will be used as on-site fill if geotechnically suitable.

- Confirmation monitoring will be implemented to ensure the long-term effectiveness of the remedial action and contingency response actions (if necessary) to protect human health and the environment. After excavation and site restoration, confirmation sampling of groundwater and air will be performed to evaluate remediation effectiveness as further described in Exhibit F, Sampling/Monitoring and Contingency Plan. Groundwater monitoring will be performed on a quarterly basis until constituent concentrations are below MTCA Method B surface water cleanup criteria for four consecutive quarters. Two rounds of ambient air monitoring will be performed during summer and fall conditions following the excavation and restoration of the site.

Additional actions such as soil vapor extraction, capping, or long-term monitoring may be implemented if groundwater or air sample results exceed cleanup levels. If groundwater or air cleanup levels are exceeded, SAM, the City, and MDA will submit a supplemental cleanup action plan for Ecology's review prior to implementing additional cleanup activities.

- Permanent heated buildings with closed basements or first floors are not planned for the site; however, if any are installed at a later date, a soil vapor investigation will be performed along the proposed footprint of the building to determine if engineering controls are needed. An indoor air sampling and analysis plan will be submitted to Ecology for its review and approval. If petroleum hydrocarbon vapor concentrations exceed MTCA indoor air criteria, engineering controls will be incorporated in the building design. An indoor air impact assessment report summarizing the results of the vapor sampling and design of any proposed engineering controls will be submitted to Ecology for review and approval. Following implementation of the approved engineering controls (if needed), an indoor air compliance monitoring program will be developed.

8.1 Points of Compliance

Soil. The determination of adequate soil treatment will be based on the remedial actions' ability to comply with the soil cleanup levels established for the site. The point of compliance for direct contact soil cleanup levels will be the upper 15 feet of soil at the site.

Groundwater. The determination of adequate groundwater treatment will be based on the remedial actions' ability to comply with the groundwater (surface water) cleanup levels established for the site. Achievement of cleanup levels in groundwater shall be measured at compliance monitoring wells located near the downgradient edge of the site (not to exceed the property boundary). A conditional point of compliance may be located at the downgradient edge of the property, if necessary.

Air. The achievement of cleanup levels in ambient air shall be measured in the breathing space on the property. The achievement of cleanup levels in indoor air, if permanent, heated buildings are constructed on the property, shall be in the breathing space of the lowest level of the structure.

9.0 SCHEDULE

SAM, the City, and the MDA shall submit to Ecology for review a draft remedial design report and construction plans and specifications (collectively referred to as remedial design documents). Ecology will endeavor to review and comment on the draft remedial design documents within fifteen working days. SAM, the City, and the MDA shall submit to Ecology final remedial design documents prior to performing the excavation. SAM, the City, and the MDA shall implement the approved remedial action in accordance with the terms and schedule contained in those documents. Excavation will be performed during the dry season, to maximize the amount of contaminated soil that can be removed given practicability considerations. SAM, the City, and the MDA shall submit construction documentation to Ecology in accordance with the approved remedial design documents.

Exhibit C to the Consent Decree outlines relevant milestones from the cleanup through the construction process for the proposed sculpture park.

10.0 INSTITUTIONAL CONTROLS

Institutional controls are measures undertaken to limit or prohibit activities that may interfere with the integrity of a cleanup action or result in exposure to

hazardous substances at the site. Such measures are required to ensure continued protection of human health and the environment when a cleanup action results in residual concentrations of hazardous substances which exceed MTCA Methods A or B cleanup levels and where conditional points of compliance are established. These institutional controls include placement of a deed restriction on the property. At this time, no institutional controls are planned. These are considered in the Contingency Plan (Exhibit F to the Consent Decree).

11.0 WORK CONSTRUCTION

The Schedule to begin work under this proposed CAP is provided in Exhibit C to the Consent Decree. Work construction at the site will be conducted under a Health and Safety Plan prepared under WAC 173-340-810.

12.0 DETERMINATIONS

Section 173-340-360(10) of the MTCA regulation states that the draft Cleanup Action Plan should include a preliminary determination that the cleanup action complies with subsections (2) and (3) of WAC 173-340-360. As specified in subsections 2 and 3, the selected cleanup action is designed to accomplish the following.

12.1 Protect Human Health and the Environment

Implementation of the preferred remedial alternative will minimize potential exposures from each of the pathways identified as being of potential concern. Removing petroleum-impacted soil is the most effective alternative for minimizing direct contact, hydrocarbon leaching, and vapor emissions. A contingency plan as described in Exhibit F to the Consent Decree will include backup remedial technologies that will ensure the continued protection of human health and the environment.

12.2 Compliance with Cleanup Standards per WAC 173-340-700 through -760

The goal of this cleanup action is to protect surface water quality, prevent direct contact with affected soils, and eliminate potential sources of vapor emissions. The cleanup action is intended to meet cleanup standards for ambient air, groundwater, and soil. If cleanup standards are not met, additional action will be taken to ensure the goals are realized, as outlined in the Contingency Plan (Exhibit F to the Consent Decree).

12.3 Compliance with Applicable State and Federal Laws per WAC 173-340-710

The cleanup action will comply with all relevant laws and requirements, as required in Section 173-340-710 of the MTCA. A detailed analysis of federal, state, and local laws and regulations that pertain to this project is provided in the **ARARs and Applicable Regulations** section of the RI/FS.

SAM, the MDA, and the City shall obtain any and all state, federal, or local permits required by applicable law, and not exempted pursuant to the Consent Decree, before commencing remedial actions at the site. This requirement shall include preparation of a SEPA checklist.

Ecology will ensure that the cleanup action meets the substantive requirements of all state and local permits that apply to this project.

12.4 Provide Compliance Monitoring per WAC 173-340-410

Performance monitoring will be conducted during the remedial action to confirm that cleanup actions have attained cleanup levels and treatment goals. Confirmation monitoring will be conducted after the excavation is complete to confirm and ensure that cleanup actions have attained cleanup and performance standards. Protection monitoring will be used to ensure that human health and the environment are being adequately protected during construction and operation of the cleanup actions.

12.5 Use Permanent Solutions to the Maximum Extent Practicable per WAC 173-340-360(4), (5), (7), and (8)

Excavating impacted soil permanently removes contaminants. The preferred remedy is protective of human health and the environment, can be effectively implemented, and is cost-effective. It is the most practicable alternative for addressing the primary exposure pathways of concern. Soil vapor extraction is considered as part of the post-excavation contingency response action backup plan. Soil vapor extraction will also permanently remove petroleum from contaminated soils and ensure protection of human health and the environment.

12.6 Short-Term Effectiveness

Short-term effectiveness [WAC 173-340-360(5)(iii)] considers how the cleanup action will impact human health and the environment during implementation and prior to achievement of cleanup levels. The selected alternative will involve earth moving and excavation activities that could cause contaminated materials to be released through dust, increased erosion potential, or removal from the site on

vehicles. These potential impacts will be mitigated through dust and erosion control actions and other best management practices. Exposure to contaminated materials that may be encountered during construction will be addressed through a worker health and safety plan and by complying with OSHA standards.

When the preferred remedial action is implemented, it will be immediately effective in preventing human direct contact or inhalation of petroleum hydrocarbons.

12.7 Long-Term Effectiveness

Long-term effectiveness [WAC 173-340-360(5)(ii)] is measured in terms of the magnitude of residual risk and the adequacy and reliability of the cleanup action.

The proposed cleanup action effectively prevents human exposure over the long-term by removing soil impacted with hazardous constituents. Natural attenuation will continue to reduce the quantity of petroleum hydrocarbons in soil and groundwater over the long-term. The compliance monitoring and contingency program outlined in Exhibit F to the Consent Decree will ensure the long-term effectiveness of the remedial action to meet RAOs established for the site.

12.8 Permanent Reduction of Toxicity, Mobility, or Volume

This evaluation criterion addresses the preferential implementation of treatment technologies that permanently and significantly reduce toxicity, mobility, and volume of the hazardous substances present. Petroleum-impacted soils disposed of off-site will be treated using thermal desorption if soil characteristics meet facility acceptance requirements. Thermal desorption permanently reduces the toxicity, mobility, and volume of contaminants. Natural attenuation will also decrease the toxicity, mobility, and volume of petroleum hydrocarbons in soil and groundwater over the long-term.

12.9 Ability to be Implemented

The proposed cleanup action involves conventional technologies (e.g., excavation, shoring, thermal desorption) that should be easily implemented.

12.10 Cleanup Cost

Cleanup costs for the selected alternative is slightly higher than the other alternatives evaluated (see RI/FS for detailed cost estimates), but this alternative involves fewer contingencies and is likely the most cost-effective option.

12.11 Consider Public Concerns per WAC 173-340-600

The public will be given the opportunity to comment during a 30-day public comment period. The following documents are presented for public comment:

- ▶ Remedial Investigation/Feasibility Study Report;
- ▶ Cleanup Action Plan; and
- ▶ Consent Decree.

The following are attached as Exhibits to the Consent Decree:

- ▶ Site Diagram showing site location and current site conditions (Exhibit A);
- ▶ Cleanup Action Plan (Exhibit B - this exhibit);
- ▶ Schedule for completing relevant milestones of the cleanup process through construction of the park (Exhibit C);
- ▶ Proposed Site Use Plan (Exhibit D);
- ▶ Draft Restrictive Covenant Language Document (Exhibit E); and
- ▶ Sampling/Monitoring and Contingency Plan (Exhibit F).

Ecology will consider all comments received. At the end of the comment period, Ecology will prepare a responsive summary listing each comment received and Ecology's response to the comment.

Further, the public will be given an opportunity to comment on the Remedial Design when it is submitted to Ecology.

13.0 REFERENCES

Ecology, 2000. Proposed Amendments to the Model Toxics Control Act Cleanup Regulation. Chapter 173-340 WAC. August, 2000.

Hart Crowser, 1999. Draft Focused Supplemental Site Characterization, Former Unocal Seattle Marketing Terminal Property, Seattle, Washington. August 18, 1999.

Hart Crowser, 2000. Draft Remedial Investigation/Feasibility Study, 10 Broad Street Site, Seattle, Washington. December 19, 2000.

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Table 1 - Proposed Cleanup Criteria for Detected Constituents in Soil and Groundwater

Constituent	Proposed Cleanup Level
Groundwater in ug/L	
Benzene	43 ¹
Toluene	48,500 ¹
Ethylbenzene	6,910 ¹
Xylenes	16,000 ¹
Gasoline-Range Hydrocarbons	1,000 ²
Diesel-Range Hydrocarbons	1,000 ²
Oil-Range Hydrocarbons	1,000 ²
Free Product	No Sheen ³
Soils in mg/kg	
Benzene	34.5 ⁴ /0.5 ⁶
Toluene	16,000 ⁴ /40 ⁶
Ethylbenzene	8,000 ⁴ /20 ⁶
Xylenes	160,000 ⁴ /20 ⁶
Gasoline-Range Hydrocarbons	TBD ⁵ /100 ⁶
Diesel-Range Hydrocarbons	TBD ⁵ /2,000 ⁷
Oil-Range Hydrocarbons	TBD ⁵ /2,000 ⁷

Notes:

TBD – To be determined

¹ Based on MTCA Method B surface water cleanup level

² Based on MTCA Method A drinking water cleanup level

³ Although no free product has been encountered at the site to date, the no sheen criteria will be applicable to the area beneath the building where no groundwater quality data have been collected

⁴ Direct contact cleanup levels based on Method B residential criteria

⁵ Direct contact cleanup levels for non-carcinogenic petroleum hydrocarbons will be based on achieving a hazard quotient of 1 under a residential exposure scenario using procedures outlined in WAC 173-340-740(3).

⁶ Soil to groundwater and soil to air cleanup levels based on Method A residential criteria. Confirmation that soil concentrations are protective of the soil to groundwater and soil to air pathways will be based on compliance with groundwater and ambient air cleanup standards. If these pathways are not in compliance, additional remedial actions may be implemented to address soils exceeding these Method A soil cleanup levels.

⁷ Soil to groundwater cleanup levels for diesel- and oil-range hydrocarbons are based on residual saturation criteria in accordance with the Interim TPH Policy.

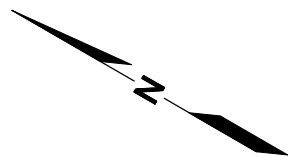
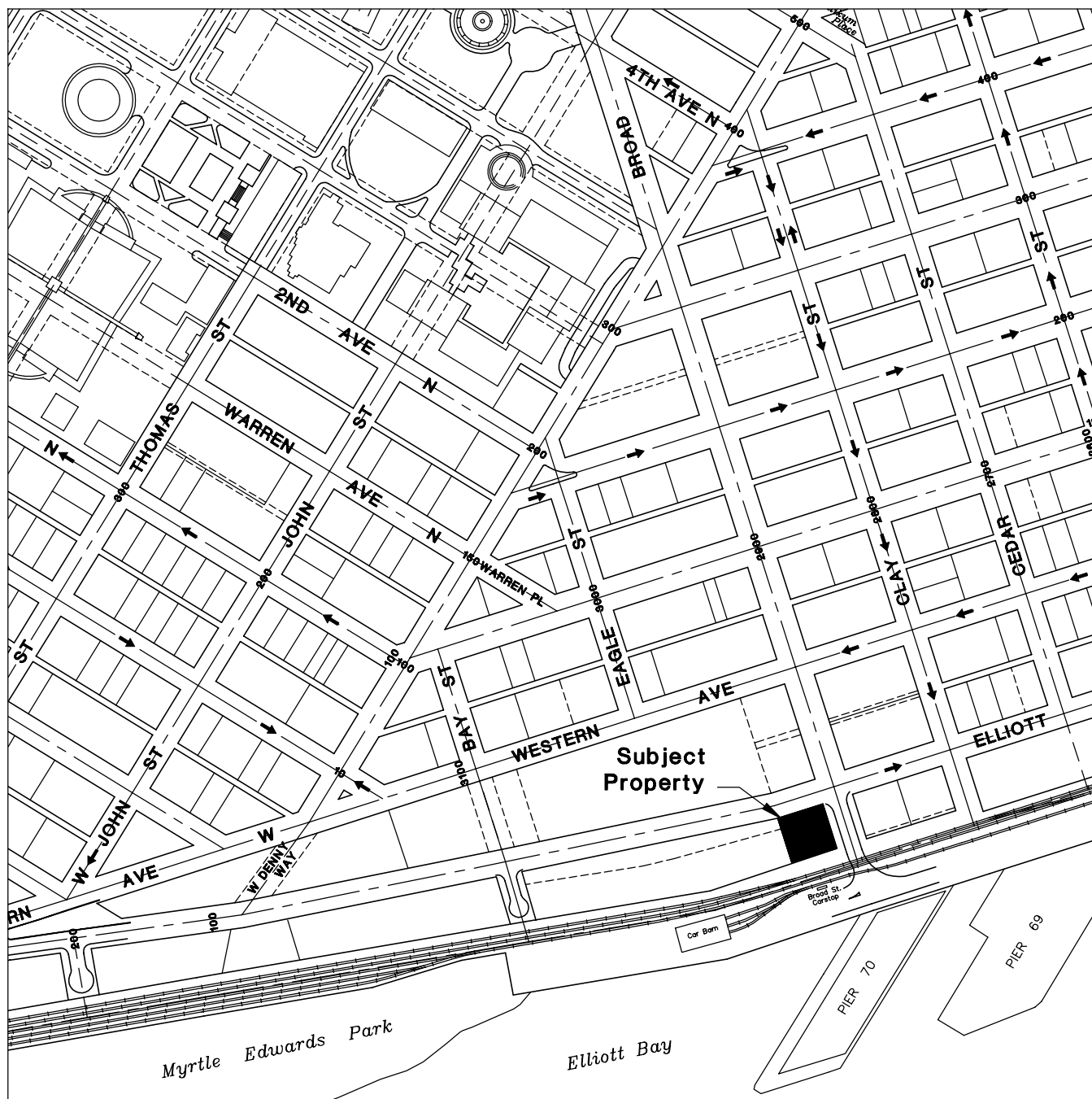
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Table 2 - Proposed Cleanup Levels for Constituents of Potential Concern in Air

Compound	MTCA Method B in ug/m³
Benzene	0.259
Toluene	183
Ethylbenzene	457
m,p-Xylene	320
o-Xylene	320
1,3,5-Trimethylbenzene	420 ⁽¹⁾
1,2,4-Trimethylbenzene	420 ⁽¹⁾
Propylene	---
1,3-Butadiene	0.00417
Hexane	91.4
Cyclohexane	3400 ⁽¹⁾
4-Ethyltoluene	---
Heptane	5,500 ⁽¹⁾
Naphthalene	170 ⁽¹⁾
C3 to C5 Aliphatic Hydrocarbons	---
C5 to C6 Aliphatic Hydrocarbons	9,120
C6 to C8 Aliphatic Hydrocarbons	9,120
C8 to C10 Aliphatic Hydrocarbons	136
C10 to C12 Aliphatic Hydrocarbons	136
C12+ Aliphatic Hydrocarbons	---
C6 to C8 Aromatic Hydrocarbons	---
C8 to C10 Aromatic Hydrocarbons	80
C10 to C12 Aromatic Hydrocarbons	80
C12+ Aromatic Hydrocarbons	---

⁽¹⁾PSCAA Acceptable Source Impact Level (ASIL) used as no Method B criterion exists for this constituent.

Vicinity Map



0 400 800
Scale in Feet



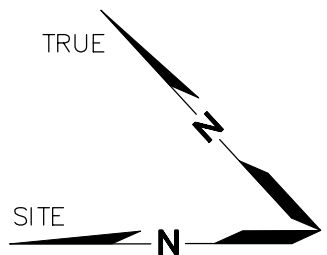
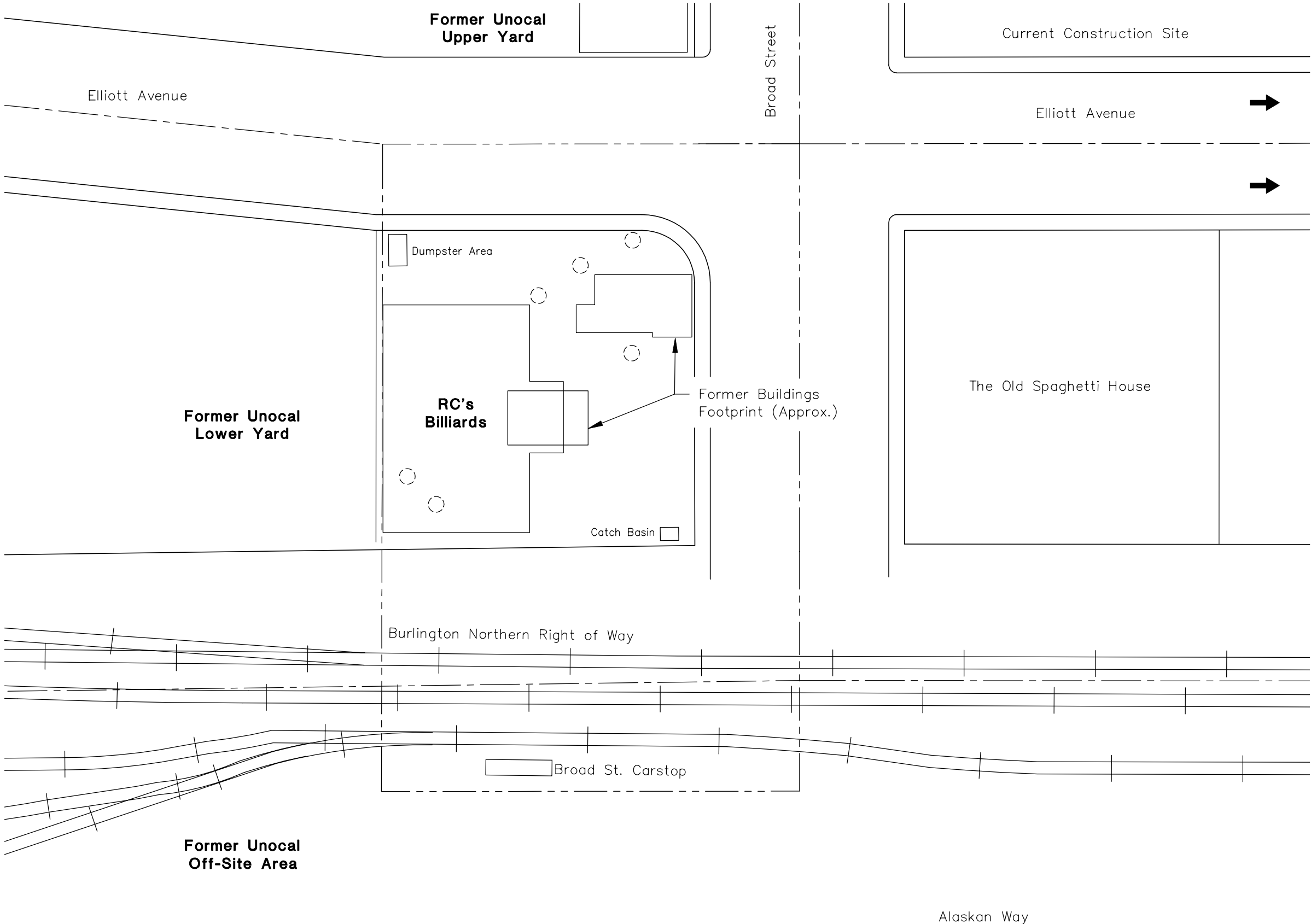
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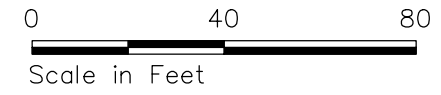
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Figure 1

Site Plan

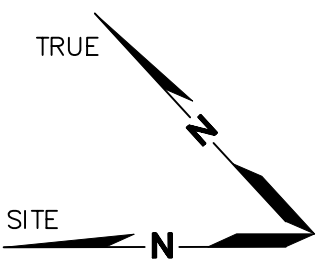
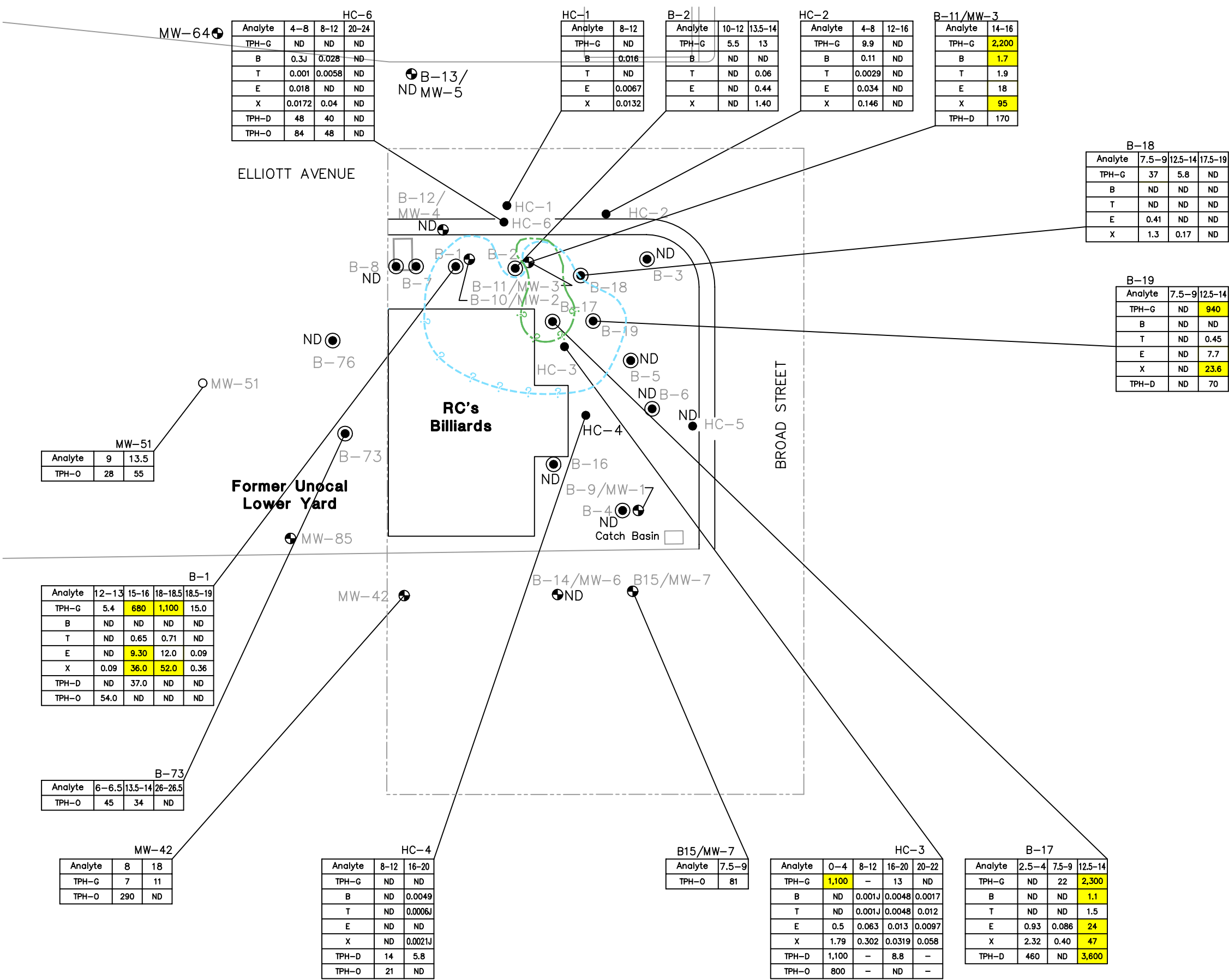


- Approximate Former Tank Location
- Approximate Property Boundary



dwl 2/06/01 1=40 (xref)NA/Charlie.pcd
70180103

Summary of Soil Quality Data



- HC-1 Boring Installed by Hart Crowser as Part of RI/FS Field Investigation
- B-16 Boring Installed During Previous Field Investigation by GeoEngineers or GeoTech Consultants.
- MW-32 Monitoring Well
- MW-51 Abandoned Well

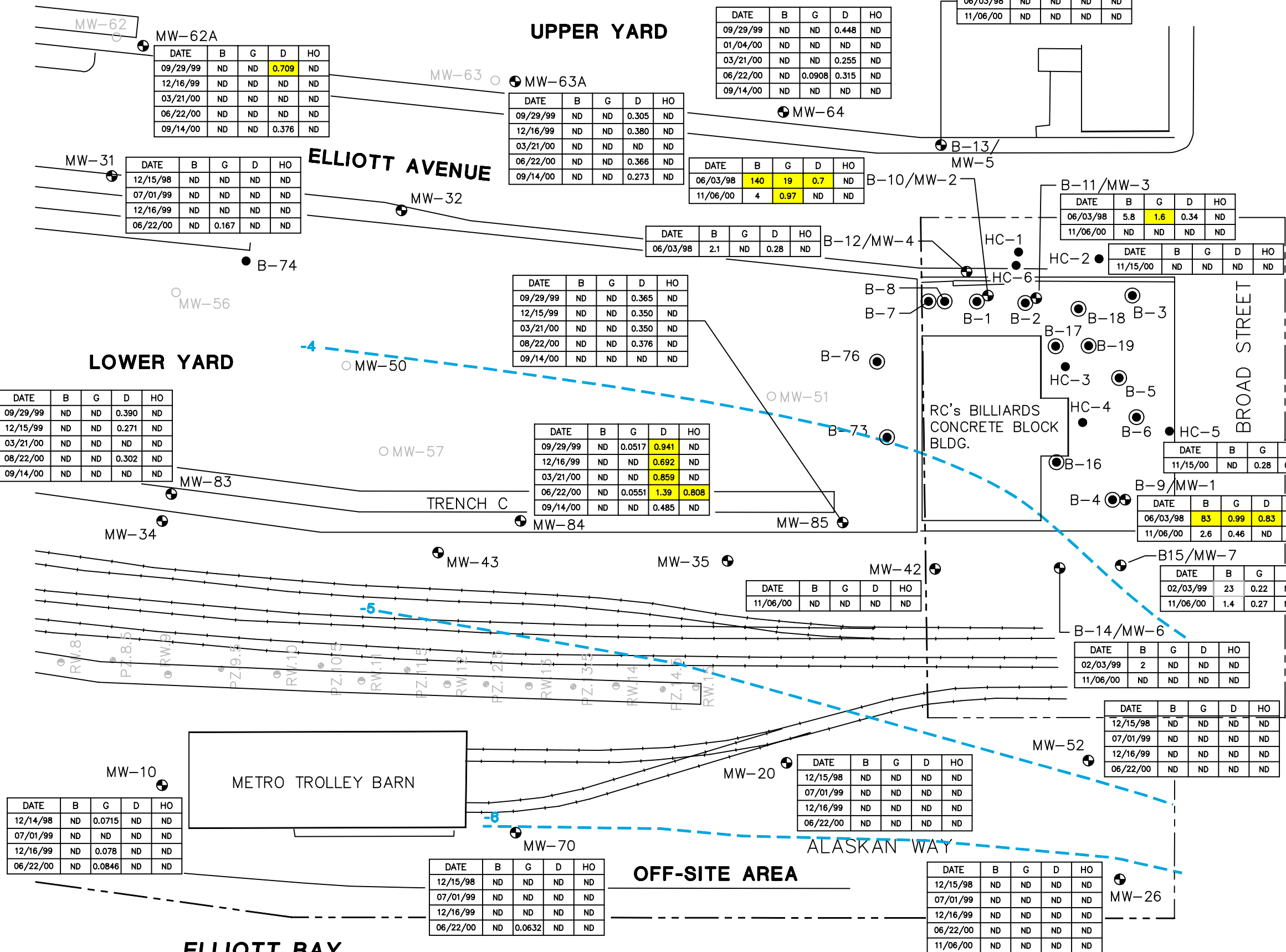
- Analyte 7.5-9 (Depth of Sample in Feet)
- TPH-G Gasoline-Range
- B Benzene
- T Toluene
- E Ethylbenzene
- X Xylenes (Total)
- TPH-D Diesel-Range
- TPH-O Oil-Range
- ND Not Detected for above Analytes

- Estimated extent of Gasoline-Range Hydrocarbon Concentrations > 100 mg/kg
- Estimated Extent of Benzene Concentrations > 0.5 mg/kg

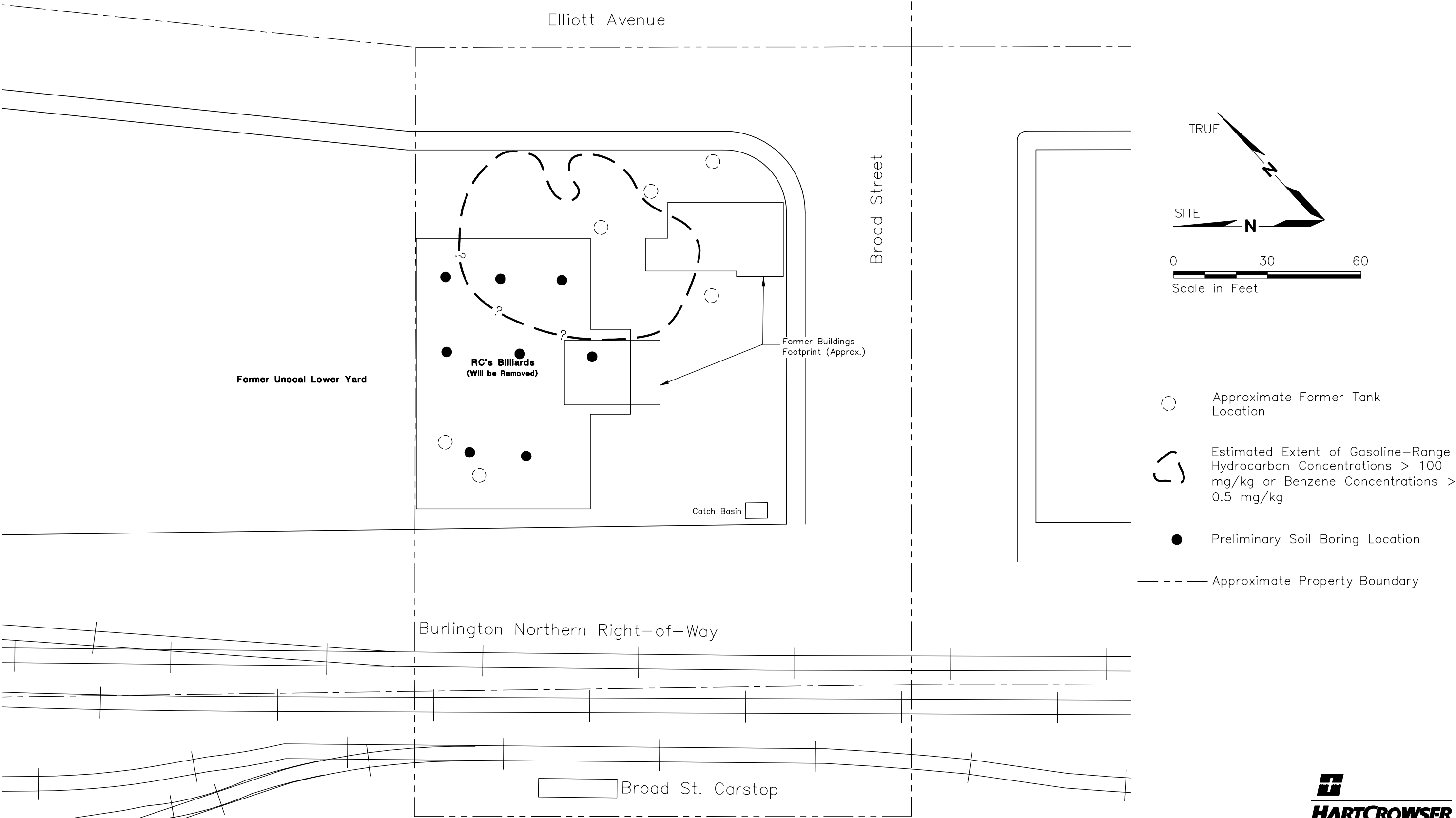
- Notes:
1) Results are reported in parts per million (ppm).
2) Shaded results exceed applicable MTCA Method A Residential Cleanup Levels.

Approximate Property Boundary

Summary of Groundwater Quality Data

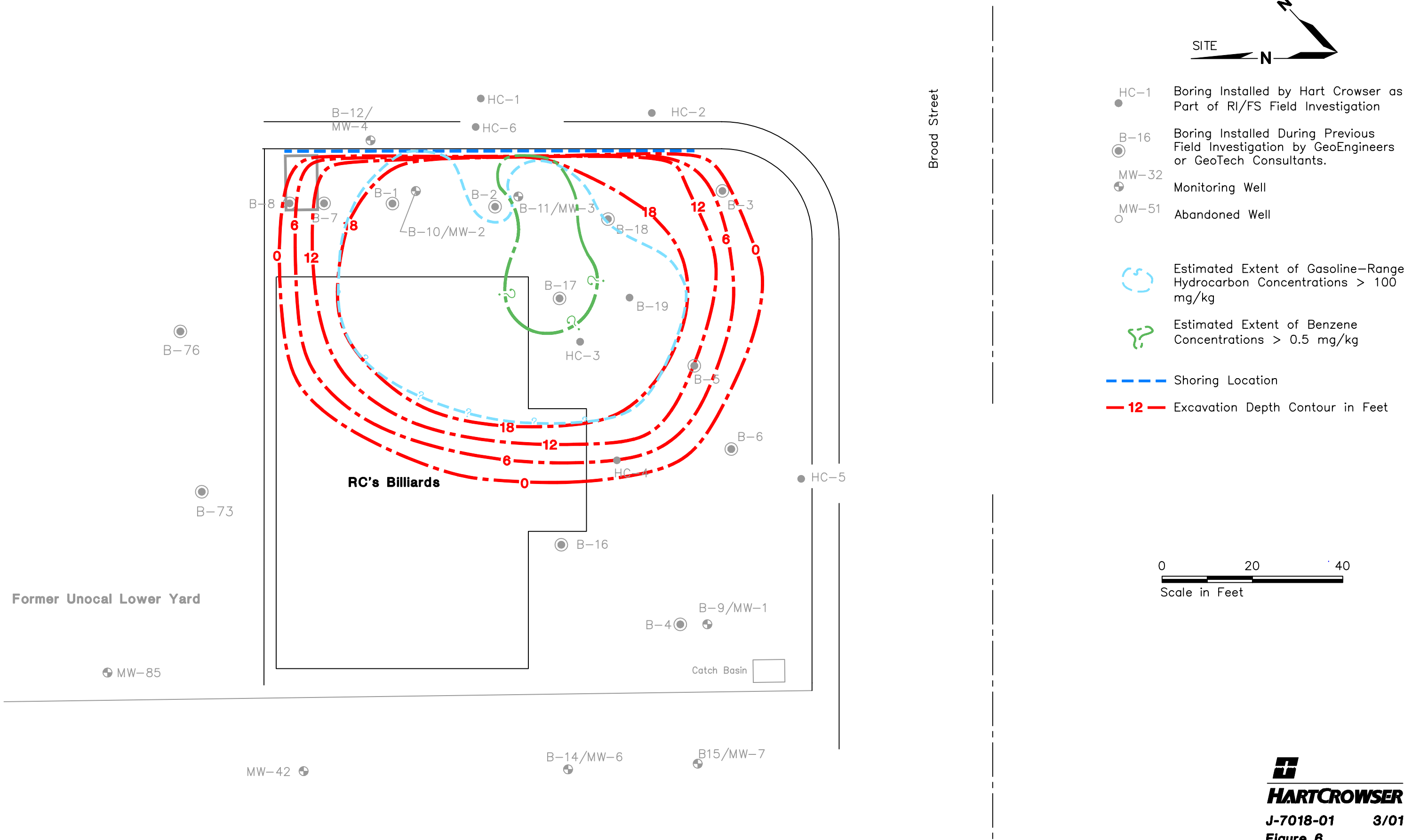


Soil Sampling Location Plan



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70180128

Excavation and Natural Attenuation Alternative



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APPENDIX A
RAOULT'S LAW INTERIM TPH POLICY WORKSHEETS

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH WITH SURROGATE APPROACH

for SOIL-TO-GROUNDWATER PATHWAY

Option 2: Soil/Pore Water Partitioning and Groundwater Mixing

Date of Cleanup Level Testing:3/14/2001

Name of Site:Fresh Diesel Standard

Address of Site:1998 Ecology report "Testing the chemical assumptions in the TPH Interim Policy for Protectiveness"

Type of Contamination:

Soil Sample ID:

Groundwater Use (enter the number):2Groundwater for Nonpotable Water Use

Passed for TPH Test?YES!TPH in Water will be0.001mg/l

Groundwater Cleanup Level

Groundwater Use	TPH (mg/l)	Dilution Factor (DF):
(1) Drinking Water	1 000	20
(2) Nonpotable Water	1 000	

Compound	Soil mg/kg	EC	MW g/mol	Moles mmol/kg	Mol Frac. %	Solubility mg/l	Effect. Sol. mg/l	DF	Conc. @well mg/l	Comp. %
Aliphatics										
EC 5-6	-	5.5	81	0.00E+00	0.00%	2.80E+01	0.00E+00	20	0.00E+00	0.00%
EC >6-8	-	7.0	100	0.00E+00	0.00%	4.20E+00	0.00E+00	20	0.00E+00	0.00%
EC >8-10	-	9.0	130	0.00E+00	0.02%	3.30E-01	6.60E-05	20	3.30E-06	0.40%
EC >10-12	-	11.0	160	0.00E+00	0.08%	2.60E-02	2.08E-05	20	1.04E-06	0.13%
EC >12-16	-	14.0	200	0.00E+00	0.26%	5.90E-04	1.53E-06	20	7.67E-08	0.01%
EC >16-21	-	19.0	270	0.00E+00	0.34%	1.00E-06	3.40E-09	20	1.70E-10	0.00%
Aromatics										
Benzene	-	6.5	78	0.00E+00	0.00%	1.78E+03	0.00E+00	20	0.00E+00	0.00%
Toluene	-	7.6	92	0.00E+00	0.00%	5.20E+02	0.00E+00	20	0.00E+00	0.00%
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-	-
*EC >8-10	-	9.0	120	0.00E+00	0.01%	6.50E+01	6.50E-03	20	3.25E-04	39.23%
EC >10-12	-	10.0	130	0.00E+00	0.02%	2.50E+01	5.00E-03	20	2.50E-04	30.18%
EC >12-16	-	14.0	150	0.00E+00	0.07%	5.80E+00	4.06E-03	20	2.03E-04	24.51%
EC >16-21	-	19.0	190	0.00E+00	0.18%	5.10E-01	9.18E-04	20	4.59E-05	5.54%
EC >21-35	-	28.0	240	0.00E+00	0.02%	6.60E-03	1.32E-06	20	6.60E-08	0.01%
TPH in Soil = - Total= 0.00E+00 1.00% TPH in Water = 0.001										

*Aromatic EC >8-10 fraction includes Ethylbenzene and Xylenes.

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH WITH SURROGATE APPROACH for SOIL-TO-GROUNDWATER PATHWAY

Option 2: Soil/Pore Water Partitioning and Groundwater Mixing

Date of Cleanup Level Testing:	3/27/2001
Name of Site:	Fresh Diesel Standard
Address of Site:	1998 Ecology report "Testing the chemical assumptions in the TPH Interim Policy for Protectiveness"
Type of Contamination:	
Soil Sample ID:	
Groundwater Use (enter the number):	2 Groundwater for Nonpotable Water Use
Passed for TPH Test?	YES! TPH in Water will be <u>0.017</u> mg/l

Groundwater Cleanup Level

Groundwater Use	TPH (mg/l)
(1) Drinking Water	1.000
(2) Nonpotable Water	1.000

Dilution Factor (DF): **1**

Compound	Soil mg/kg	EC	MW g/mol	Moles mmol/kg	Mol Frac. %	Solubility mg/l	Effect. Sol. mg/l	DF	Conc. @well mg/l	Comp. %
<u>Aliphatics</u>										
EC 5-6	-	5.5	81	0.00E+00	0.00%	2.80E+01	0.00E+00	1	0.00E+00	0.00%
EC >6-8	-	7.0	100	0.00E+00	0.00%	4.20E+00	0.00E+00	1	0.00E+00	0.00%
EC >8-10	-	9.0	130	0.00E+00	0.02%	3.30E-01	6.60E-05	1	6.60E-05	0.40%
EC >10-12	-	11.0	160	0.00E+00	0.08%	2.60E-02	2.08E-05	1	2.08E-05	0.13%
EC >12-16	-	14.0	200	0.00E+00	0.26%	5.90E-04	1.53E-06	1	1.53E-06	0.01%
EC >16-21	-	19.0	270	0.00E+00	0.34%	1.00E-06	3.40E-09	1	3.40E-09	0.00%
<u>Aromatics</u>										
Benzene	-	6.5	78	0.00E+00	0.00%	1.78E+03	0.00E+00	1	0.00E+00	0.00%
Toluene	-	7.6	92	0.00E+00	0.00%	5.20E+02	0.00E+00	1	0.00E+00	0.00%
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-	-
*EC >8-10	-	9.0	120	0.00E+00	0.01%	6.50E+01	6.50E-03	1	6.50E-03	39.23%
EC >10-12	-	10.0	130	0.00E+00	0.02%	2.50E+01	5.00E-03	1	5.00E-03	30.18%
EC >12-16	-	14.0	150	0.00E+00	0.07%	5.80E+00	4.06E-03	1	4.06E-03	24.51%
EC >16-21	-	19.0	190	0.00E+00	0.18%	5.10E-01	9.18E-04	1	9.18E-04	5.54%
EC >21-35	-	28.0	240	0.00E+00	0.02%	6.60E-03	1.32E-06	1	1.32E-06	0.01%
TPH in Soil =	-		Total=	0.00E+00	1.00%		TPH in Water =		<u>0.017</u>	

*Aromatic EC >8-10 fraction includes Ethylbenzene and Xylenes.

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH WITH SURROGATE APPROACH for SOIL-TO-GROUNDWATER PATHWAY

Option 2: Soil/Pore Water Partitioning and Groundwater Mixing

Date of Cleanup Level Testing:	3/27/2001
Name of Site:	Bunker C Standard
Address of Site:	1998 Ecology report "Testing the chemical assumptions in the TPH Interim Policy for Protectiveness"
Type of Contamination:	
Soil Sample ID:	
Groundwater Use (enter the number):	2 Groundwater for Nonpotable Water Use
Passed for TPH Test?	YES! TPH in Water will be 0.001 mg/l

Groundwater Cleanup Level

Groundwater Use	TPH (mg/l)
(1) Drinking Water	1.000
(2) Nonpotable Water	1.000

Dilution Factor (DF): **20**

Compound	Soil mg/kg	EC	MW g/mol	Moles mmol/kg	Mol Frac. %	Solubility mg/l	Effect. Sol. mg/l	DF	Conc. @well mg/l	Comp. %
<u>Aliphatics</u>										
EC 5-6	-	5.5	81	0.00E+00	0.00%	2.80E+01	0.00E+00	20	0.00E+00	0.00%
EC >6-8	-	7.0	100	0.00E+00	0.00%	4.20E+00	0.00E+00	20	0.00E+00	0.00%
EC >8-10	-	9.0	130	0.00E+00	0.00%	3.30E-01	0.00E+00	20	0.00E+00	0.00%
EC >10-12	-	11.0	160	0.00E+00	0.00%	2.60E-02	0.00E+00	20	0.00E+00	0.00%
EC >12-16	-	14.0	200	0.00E+00	0.10%	5.90E-04	5.61E-07	20	2.80E-08	0.01%
EC >16-34	-	19.0	270	0.00E+00	0.20%	1.00E-06	1.95E-09	20	9.75E-11	0.00%
<u>Aromatics</u>										
Benzene	-	6.5	78	0.00E+00	0.00%	1.78E+03	0.00E+00	20	0.00E+00	0.00%
Toluene	-	7.6	92	0.00E+00	0.00%	5.20E+02	0.00E+00	20	0.00E+00	0.00%
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-	-
*EC >8-10	-	9.0	120	0.00E+00	0.00%	6.50E+01	0.00E+00	20	0.00E+00	0.00%
EC >10-12	-	10.0	130	0.00E+00	0.00%	2.50E+01	0.00E+00	20	0.00E+00	0.00%
EC >12-16	-	14.0	150	0.00E+00	0.15%	5.80E+00	8.41E-03	20	4.21E-04	81.93%
EC >16-21	-	19.0	190	0.00E+00	0.36%	5.10E-01	1.84E-03	20	9.21E-05	17.94%
EC >21-35	-	28.0	240	0.00E+00	0.20%	6.60E-03	1.35E-05	20	6.73E-07	0.13%
TPH in Soil =	-		Total=	0.00E+00	1.00%		TPH in Water =		0.001	

*Aromatic EC >8-10 fraction includes Ethylbenzene and Xylenes.

SOIL CLEANUP LEVEL CALCULATIONS FOR HUMAN HEALTH WITH SURROGATE APPROACH

for SOIL-TO-GROUNDWATER PATHWAY

Option 2: Soil/Pore Water Partitioning and Groundwater Mixing

Date of Cleanup Level Testing:	3/14/2001
Name of Site:	Bunker C Standard
Address of Site:	1998 Ecology report "Testing the chemical assumptions in the TPH Interim Policy for Protectiveness"
Type of Contamination:	
Soil Sample ID:	
Groundwater Use (enter the number):	2 Groundwater for Nonpotable Water Use
Passed for TPH Test?	YES! TPH in Water will be <u>0.010</u> mg/l

Groundwater Cleanup Level

Groundwater Use	TPH (mg/l)
(1) Drinking Water	1.000
(2) Nonpotable Water	1.000

Dilution Factor (DF): **1**

Compound	Soil mg/kg	EC	MW g/mol	Moles mmol/kg	Mol Frac. %	Solubility mg/l	Effect. Sol. mg/l	DF	Conc. @well mg/l	Comp. %
<u>Aliphatics</u>										
EC 5-6	-	5.5	81	0.00E+00	0.00%	2.80E+01	0.00E+00	1	0.00E+00	0.00%
EC >6-8	-	7.0	100	0.00E+00	0.00%	4.20E+00	0.00E+00	1	0.00E+00	0.00%
EC >8-10	-	9.0	130	0.00E+00	0.00%	3.30E-01	0.00E+00	1	0.00E+00	0.00%
EC >10-12	-	11.0	160	0.00E+00	0.00%	2.60E-02	0.00E+00	1	0.00E+00	0.00%
EC >12-16	-	14.0	200	0.00E+00	0.10%	5.90E-04	5.61E-07	1	5.61E-07	0.01%
EC >16-34	-	19.0	270	0.00E+00	0.20%	1.00E-06	1.95E-09	1	1.95E-09	0.00%
<u>Aromatics</u>										
Benzene	-	6.5	78	0.00E+00	0.00%	1.78E+03	0.00E+00	1	0.00E+00	0.00%
Toluene	-	7.6	92	0.00E+00	0.00%	5.20E+02	0.00E+00	1	0.00E+00	0.00%
Ethylbenzene	-	-	-	-	-	-	-	-	-	-
Xylenes	-	-	-	-	-	-	-	-	-	-
*EC >8-10	-	9.0	120	0.00E+00	0.00%	6.50E+01	0.00E+00	1	0.00E+00	0.00%
EC >10-12	-	10.0	130	0.00E+00	0.00%	2.50E+01	0.00E+00	1	0.00E+00	0.00%
EC >12-16	-	14.0	150	0.00E+00	0.15%	5.80E+00	8.41E-03	1	8.41E-03	81.93%
EC >16-21	-	19.0	190	0.00E+00	0.36%	5.10E-01	1.84E-03	1	1.84E-03	17.94%
EC >21-35	-	28.0	240	0.00E+00	0.20%	6.60E-03	1.35E-05	1	1.35E-05	0.13%
TPH in Soil =	-		Total=	0.00E+00	1.00%		TPH in Water =		<u>0.010</u>	

*Aromatic EC >8-10 fraction includes Ethylbenzene and Xylenes.

EXHIBIT C
PROSPECTIVE PURCHASER
CONSENT DECREE SCHEDULE

EXHIBIT C
SEATTLE ART MUSEUM
10 BROAD STREET
PROSPECTIVE PURCHASER CONSENT DECREE SCHEDULE
MARCH 15, 2001

Perform pre-excavation field investigation	Beginning no later than June 1, 2002 and to be completed prior to initiation of excavation activities.
Issue draft remedial design report for Ecology review	To be completed at least 105 days prior to initiation of excavation activities.
Ecology review of remedial design report and submittal of written comments	Within 15 days after receiving remedial design report
Finalize remedial design report	Within 15 days after receiving final Ecology comments
Conduct 30-day Public Comment on the Remedial Design	Ecology will prepare Responsiveness Summary and request revisions on the Remedial Design document, if necessary, or provide approval of Remedial Design Document within 15 days of closure of comment period.
Prepare revised Remedial Design document, if necessary.	Within 30 days after receiving final Ecology comments
Implement approved remedial actions and performance monitoring	Excavation activities will be performed during dry season conditions to maximize the amount of contaminated soil that can be removed given practicability considerations. Performance monitoring will be completed in accordance with the schedule included in the approved remedial design report.
Perform four quarters (1 year) of groundwater compliance monitoring	First round of compliance monitoring will be performed approximately 90 days after excavation activities are completed.
Submit for Ecology review a groundwater compliance technical memorandum which summarizes the results of groundwater monitoring program and evaluates whether contingency plan for groundwater is required	Within 60 days after completing fourth quarter of groundwater compliance monitoring
Ecology issues written determination as to whether contingency groundwater monitoring is necessary to	Within 30 days after receiving groundwater compliance monitoring technical memorandum

address potential surface water impacts

Issue contingency natural attenuation groundwater sampling and analysis plan for Ecology review (if needed) and file Restrictive Covenant for the site groundwater.

Within 60 days after Ecology issues written determination that contingency groundwater monitoring is necessary to address potential surface water impacts

Ecology review of contingency natural attenuation groundwater sampling and analysis plan and submittal of written comments

Within 30 days after receiving contingency natural attenuation groundwater sampling and analysis plan

Finalize contingency natural attenuation groundwater sampling and analysis plan

Within 45 days after receiving final Ecology comments and approval letter.

Perform contingency natural attenuation groundwater sampling program

Pursuant to schedule included in the contingency groundwater sampling and analysis plan approved by Ecology

Issue contingency natural attenuation groundwater quality technical memorandum for Ecology review

Within 90 days of completing contingency natural attenuation groundwater monitoring program

Ecology issues written determination as to whether contingency remedial actions are necessary to address groundwater impacts to surface water.

Within 30 days after receiving contingency natural attenuation groundwater quality technical memorandum. RAO for groundwater is considered attained when groundwater cleanup levels are below criteria for four consecutive quarters.

Issue contingency groundwater remedial design report for Ecology review (if needed)

Within 90 days after Ecology issues written determination that contingency remedial actions are necessary to address surface water impacts

Ecology review of contingency groundwater remedial design report and submittal of written comments

Within 45 days after receiving contingency groundwater remedial design report

Finalize contingency groundwater remedial design report

Within 60 days after receiving final Ecology comments and approval letter

Implement contingency groundwater remedial action (if needed) and begin groundwater confirmation monitoring

In accordance with schedule included in approved contingency groundwater remedial design report. RAO for groundwater is considered attained when groundwater cleanup levels are below criteria for four consecutive quarters.

Perform 2 rounds of ambient air compliance monitoring

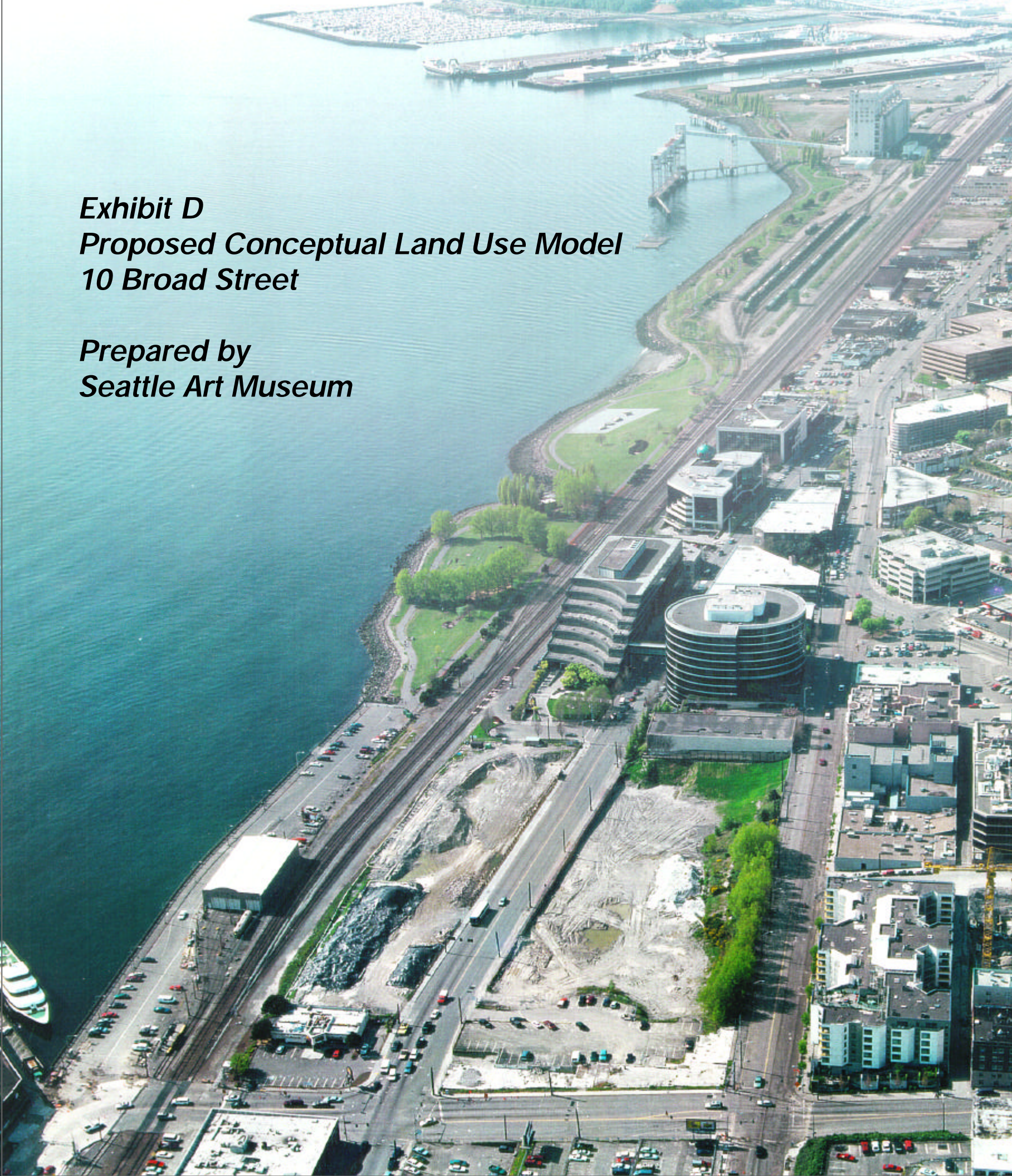
In the summer and fall following completion of excavation activities.

Submit for Ecology review an ambient air compliance technical memorandum which summarizes the results of ambient air monitoring program and evaluates whether contingency remedial action for ambient air is required	Within 60 days after completing second ambient air compliance monitoring event
Ecology issues written determination as to whether contingency remedial actions and/or additional monitoring are necessary to address ambient air.	Within 30 days after receiving ambient air compliance monitoring technical memorandum
Issue contingency ambient air remedial design report for Ecology review (if needed)	Within 60 days after Ecology issues written determination that contingency remedial actions are necessary to address ambient air
Ecology review of contingency ambient air remedial design report and submittal of written comments	Within 45 days after receiving contingency ambient air remedial design report
Finalize contingency ambient air remedial design report	Within 60 days after receiving final Ecology comments and approval letter
Implement contingency ambient air remedial action and long term monitoring approved by Ecology (if needed)	In accordance with schedule included in approved contingency ambient air remedial design report.
Issue indoor air sampling and analysis plan for Ecology review (if needed)	Within 90 days after building location is selected and design is finalized (there are no current plans for installing a permanent heated building on the site)
Ecology review of indoor air sampling and analysis plan and submittal of written comments	Within 30 days after receiving indoor air sampling and analysis plan
Finalize indoor air sampling and analysis plan	Within 30 days after receiving final Ecology comments and approval letter.
Perform indoor air sampling program	Pursuant to schedule included in the indoor air sampling and analysis plan approved by Ecology
Issue indoor air impact assessment report for Ecology review	Within 90 days of completing indoor air monitoring field program
Ecology issues written determination as to whether contingency remedial actions are necessary to address indoor air and the associated long-term indoor air monitoring needs.	Within 30 days after receiving indoor air impact assessment report
Issue indoor air engineering control design report for Ecology review (if needed)	Within 60 days after Ecology issues written determination that contingency remedial actions are

	necessary to address indoor air
Ecology review of indoor air engineering control design report and submittal of written comments	Within 45 days after receiving indoor air engineering control design report
Finalize indoor air engineering control design report	Within 60 days after receiving final Ecology comments and approval letter
Implement indoor air engineering controls approved by Ecology (if needed)	At time of building construction
Issue indoor air compliance monitoring plan (if engineering controls are implemented)	Within 60 days after engineering control design is approved
Ecology review of indoor air compliance monitoring plan and submittal of written comments	Within 30 days after receiving indoor air compliance monitoring plan
Finalize indoor air compliance monitoring plan	Within 30 days after receiving final Ecology comments and approval letter
Begin indoor air compliance monitoring field program	Prior to building occupancy and pursuant to schedule included in indoor air compliance monitoring plan approved by Ecology
Issue draft remedial action report for Ecology review	Within 90 days after remedial and contingency (if needed) actions are completed
Ecology review of draft remedial action report and submittal of written comments	Within 30 days after receiving draft remedial action report
Finalize remedial action report	Within 30 days after receiving final Ecology comments

Exhibit D
Proposed Conceptual Land Use Model
10 Broad Street

Prepared by
Seattle Art Museum





SEATTLE ART MUSEUM

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SEATTLE ART MUSEUM

Olympic Sculpture Park on the Seattle Waterfront

The Seattle Art Museum (SAM) recently acquired Unocal's former Seattle Marketing Terminal as the setting for its planned Olympic Sculpture Park. SAM has also been working to acquire the property located at 10 Broad Street as an addition to the sculpture park property. Once acquired, this property will be developed as public open space dedicated to the exhibition of outdoor sculpture. Although specific site plans have not yet been developed, conceptual planning calls for pedestrian trails throughout the exhibition area, landscaped green space, and visitor entrances. The addition of the 10 Broad Street property will also enable the establishment of direct access between the sculpture park and the public waterfront. Currently, there is no plan for structures on this portion of the overall sculpture park site, but provisions will be made for small accessory structures to house restrooms, concessions, and other visitor services.

The design of the sculpture park will be governed by a concept plan managed by SAM. Under a proposed concept plan process, redevelopment of the sculpture park could occur simultaneously with redevelopment of the City-owned Alaskan Way right of way and Myrtle Edwards Park. A cohesive design process will further three principle design goals for this larger park area: increased exposure to and knowledge of sculpture as a visual art form; improving and expanding open space for downtown residents, office workers, and visitors; and enhancing native habitat within Seattle's urban environment.

Improvement to the Alaskan Way right of way and its connection to the 10 Broad Street property will be done by SAM in partnership with the City of Seattle, who currently maintains the property. This includes removing a portion of the paved parking area, relocating the streetcar maintenance facility, expanding the pedestrian sidewalk into a bicycle path from Myrtle Edwards to Broad Street, and replanting certain portions of the former street with native plants. Planning discussions have also included a small floating pier or dock that would be attached to the existing seawall and would be used for fishing and observation of marine life. The attached conceptual layouts (Figures 1 through 3) propose initial design ideas for the new park. Final locations for structures and pathways have not yet been determined and are presented for illustrative purposes only.

For more information, please contact:

Chris Rogers
Director of Capital Projects
Seattle Art Museum
P.O. 22000
Seattle, WA 98122

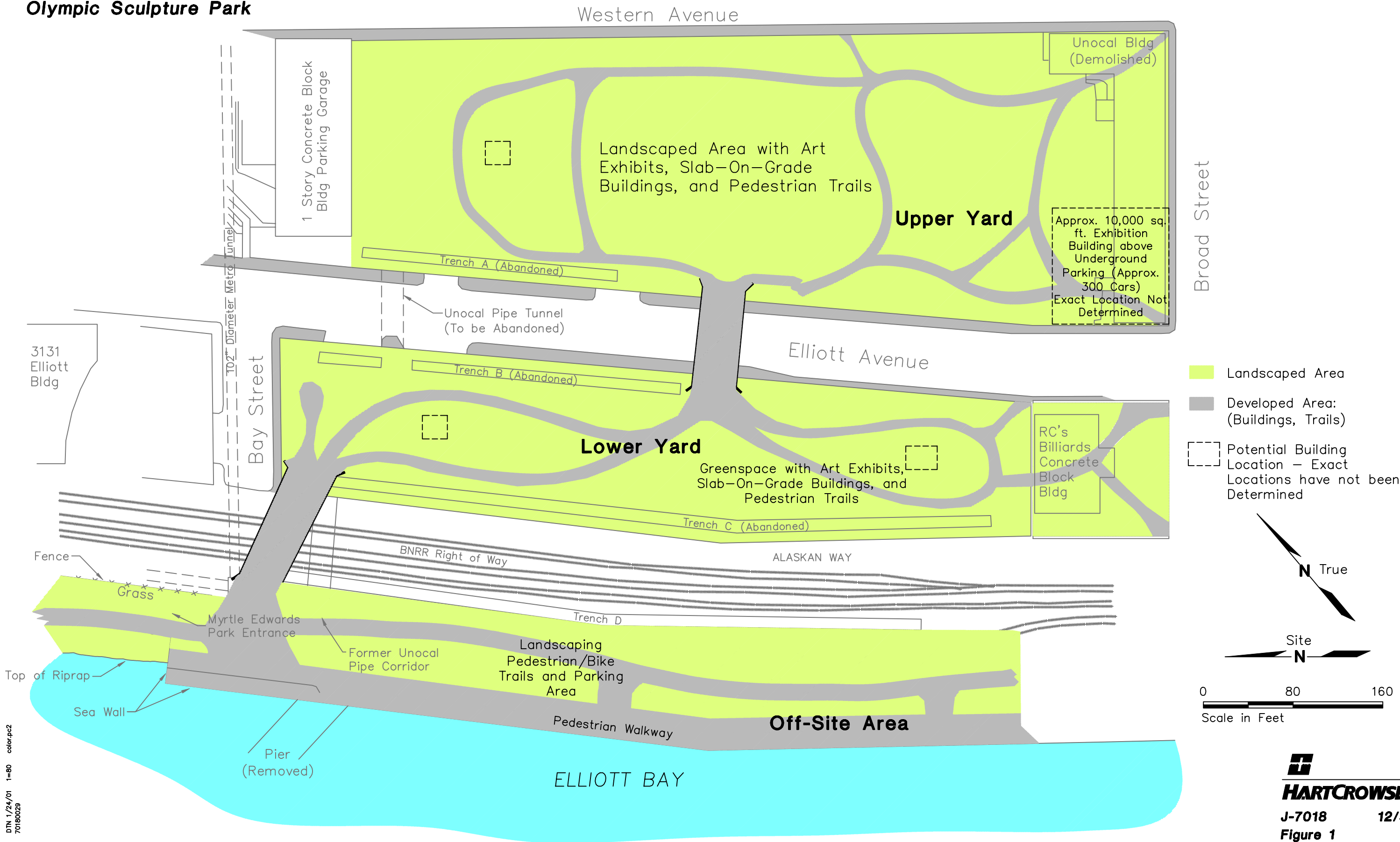
**AERIAL PHOTOGRAPHS OF
FORMER UNOCAL SEATTLE MARKETING TERMINAL**





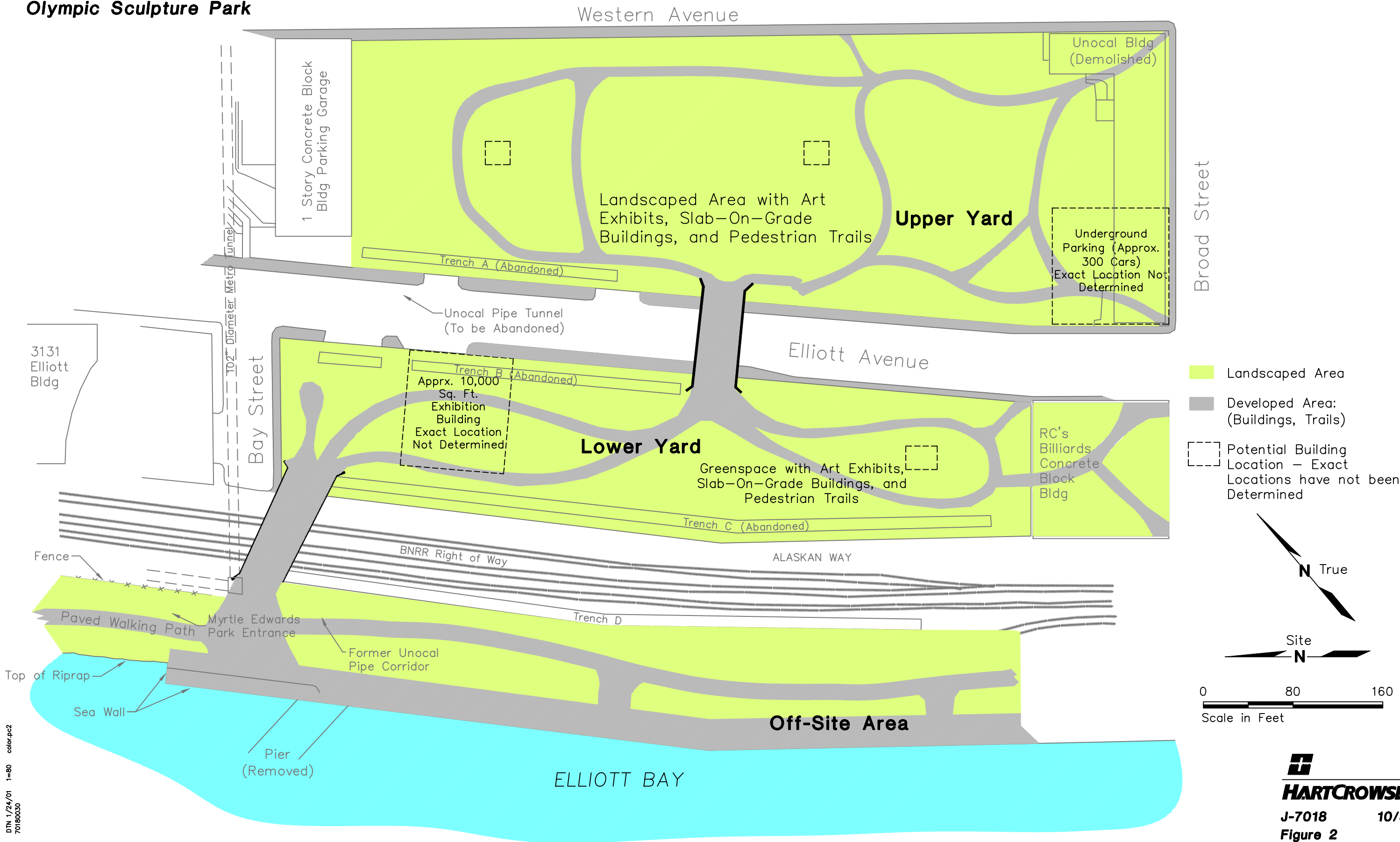
PRELIMINARY CONCEPTUAL SITE PLANS

Preliminary Conceptual Layout
Olympic Sculpture Park



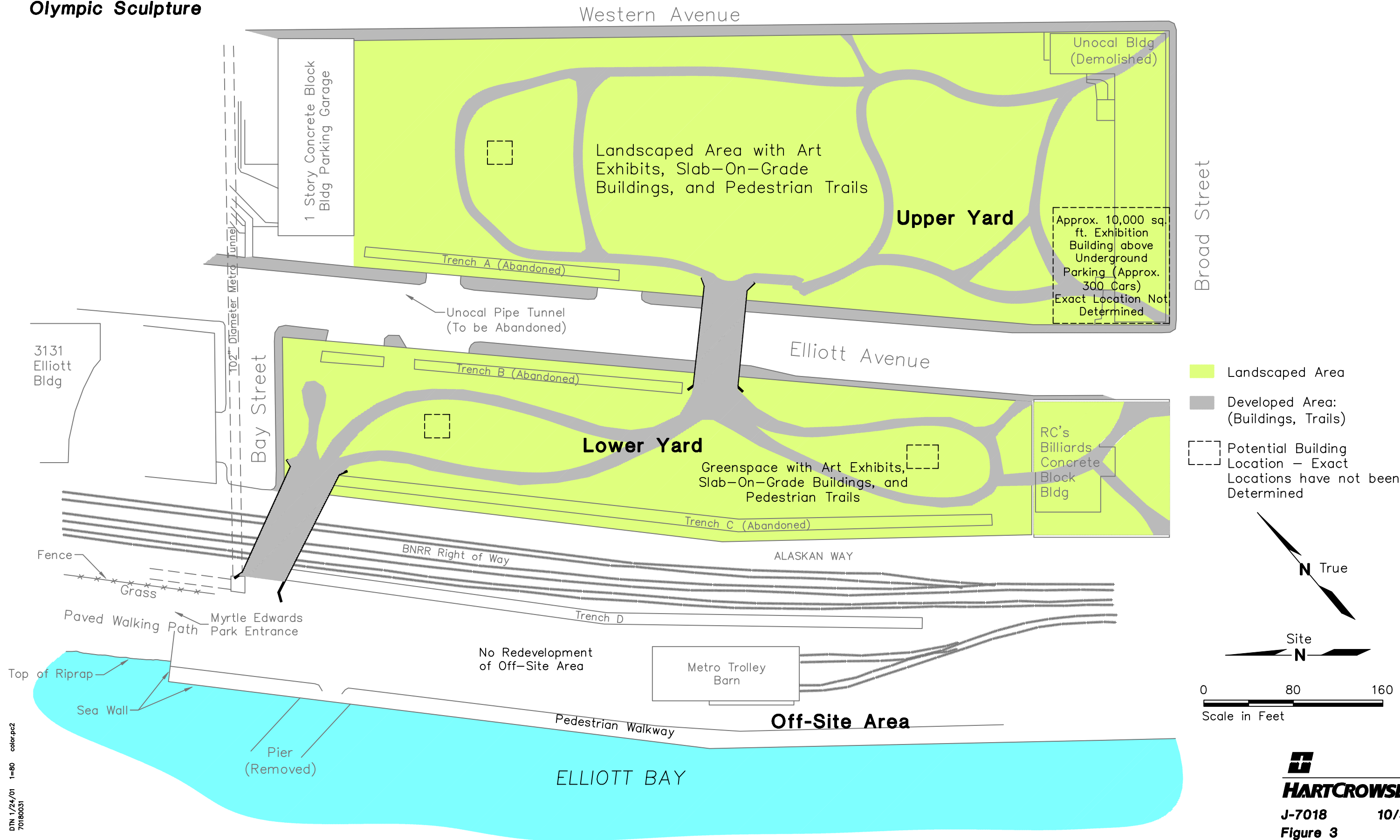
Note: Layout is presented for conceptual purposes only.

Preliminary Conceptual Layout - Option Two
Olympic Sculpture Park



Note: Layout is presented for conceptual purposes only.

Preliminary Conceptual Layout - Option Three
Olympic Sculpture



Note: Layout is presented for conceptual purposes only.

**NEWSPAPER ARTICLE REGARDING PROPOSED
OLYMPIC SCULPTURE PARK**

Land deal will advance plan for sculpture park

By TODD BISHOP
STAFF WRITER

The Seattle Art Museum has reached an agreement to buy the final parcel needed for its waterfront Olympic Sculpture Park, leaving five months to raise the \$3.56 million cost of the purchase.

The site, at the northwest corner of Elliott Avenue and Broad Street, was previously expected to become home to a 13-story, 89-unit condominium building.

Museum officials expressed relief as they announced the deal this week. Negotiations were not easy, they conceded.

▼

For that reason, said Seattle Art Museum officials, they pursued the parcel both for what it would add to the planned \$60 million sculpture park and to avoid the complications expected to arise were it not acquired. A large structure on the property would hinder views from the park and access to it, among other things.

Museum officials expressed relief as they announced the deal this week. Negotiations were not easy, they conceded. The city of Seattle had considered condemning the property if the talks failed.

The museum's purchase-and-sale agreement for the 10 Broad St. property was

reached with both the landowner, LarMar Inc., and the would-be developer of the condominium project, the Fortune Group.

"There was a strong desire on the part of the (property's) owners, in particular, to see this become green space," said Chris Rogers, the museum's director of capital projects. "I think Fortune felt the same way in the end, as well."

The property, currently the site of R.C.'s Billiards, totals about one-third of an acre. It is at the southern edge of the 7.5-acre sculpture park site. If the museum is able to raise enough money to close the deal, the site will be incorporated into the park, improving the link between its upper two levels and the waterfront, which is to be made more accommodating to pedestrians as part the project.

Museum officials said they are cautiously optimistic about their prospects for raising the money to buy the site. Funds are expected to come from public and private sources. The museum was able to raise the \$17 million needed to buy the bulk of the sculpture park site in six months.

Contributors to the earlier fund-raising effort included residents, businesses and developers associated with properties in the vicinity of the site, which is in the midst of Belltown's residential development boom. A designer for the project is scheduled to be selected by early next year, and the park is to open to the public in 2003.

Reach Todd Bishop at 206-447-8505 ext. 212 or tbishop@bizjournals.com.

EXHIBIT E
RESTRICTIVE COVENANT

EXHIBIT E
RESTRICTIVE COVENANT

10 Broad Street, Seattle, Washington

This declaration of Restrictive Covenant is made pursuant to RCW 70.105D.030(1)(f and g), and WAC 173-340-440, by the City of Seattle, the Seattle Art Museum and the Museum Development Authority, their successors and assigns, and the Washington State Department of Ecology, its successors and assigns.

Legal Description:

That certain real property located in the County of King, State of Washington, and legally described as follows:

Parcel No. 1: Lots 3 and 4, Block 5, William N. Bell's Seventh Addition to the City of Seattle, according to the Plat thereof recorded in Volume 2 of Plats, page 82, records of King County, Washington;

Excepting therefrom that portion platted as Seattle Tidelands;

Also Excepting therefrom, that portion described as follows:

Beginning at a point on the Southeasterly line of said Lot 3, distant 14.408 feet Southwesterly of the most Easterly corner of said Lot;

Thence Northerly and Westerly along the arc of a curve to the left having a radius of 24 feet, an arc distance of 27.83 feet to a point on the Northeasterly line of said Lot 3, distant 22 feet Northwesterly of said most Easterly corner;

Thence Southeasterly along said Northeasterly line to said most Easterly corner;

Thence Southwesterly along the Southeasterly line of said Lot to the point of Beginning.

Parcel No. 2: Lots 5 and 6, Block 168-B, Supplemental Plat of Seattle Tidelands, as shown on the Official Maps of Seattle Tidelands on file in the office of the Commissioner of Public Lands at Olympia, in King County, Washington.

Seattle Art Museum, Museum Development Authority, City of Seattle, King Co. Consent

Decree No.:

EXHIBIT E
RESTRICTIVE COVENANT

10 Broad Street, Seattle, Washington

This Declaration of Restrictive Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by the City of Seattle (the "City"), the Seattle Art Museum ("SAM") and the Museum Development Authority ("MDA"), their successors and assigns including future owners and lessees (collectively hereafter "Owner"), and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action occurred at the property legally described below (the "Property") that is the subject of this Restrictive Covenant. The remedial action conducted at the property is described in the following documents, which are on file at Ecology's Northwest Regional Office:

1. Phase 2 Environmental Site Assessment, February 1998, by GeoTech Consultants.
2. Supplemental Phase 2 Environmental Studies, August 1998 and April 1999, by GeoTech Consultants.
3. Groundwater Sampling, May 1999, GeoTech Consultants.
4. Remedial Investigation/Feasibility Study, 10 Broad Street Site, Seattle, Washington, January 29, 2001, by Hart Crowser prepared for the Seattle Art Museum.
5. Cleanup Action Plan, 10 Broad Street Site, Seattle, Washington, January ____, 2001, by Hart Crowser prepared for the Seattle Art Museum.

This Restrictive Covenant is required because the remedial action resulted in residual concentrations of _____ [identify hazardous substance(s)] that exceed the Model Toxics Control Act (MTCA) Method A or B Cleanup Levels, as outlined in the Cleanup Action Plan, for _____ [identify soil and/or groundwater] beneath the Property [for soil add: at depths of about _____ feet below ground surface] established under WAC Chapter 173-340.

The undersigned [City, SAM and/or the MDA] are the fee owner and/or lessees of the Property in the County of King, State of Washington, that is subject to this Restrictive Covenant. The Property is legally described as follows:

That certain real property located in the County of King, State of Washington, and legally described as follows:

Parcel No. 1: Lots 3 and 4, Block 5, William N. Bell's Seventh Addition to the City of Seattle, according to the Plat thereof recorded in Volume 2 of Plats, page 82, records of King County, Washington;

Excepting therefrom that portion platted as Seattle Tidelands;

Also Excepting therefrom, that portion described as follows:

Beginning at a point on the Southeasterly line of said Lot 3, distant 14.408 feet Southwesterly of the most Easterly corner of said Lot;
Thence Northerly and Westerly along the arc of a curve to the left having a radius of 24 feet, an arc distance of 27.83 feet to a point on the Northeasterly line of said Lot 3, distant 22 feet Northwesterly of said most Easterly corner;
Thence Southeasterly along said Northeasterly line to said most Easterly corner;
Thence Southwesterly along the Southeasterly line of said Lot to the point of Beginning.

Parcel No. 2: Lots 5 and 6, Block 168-B, Supplemental Plat of Seattle Tidelands, as shown on the Official Maps of Seattle Tidelands on file in the office of the Commissioner of Public Lands at Olympia, in King County, Washington.

The undersigned make the following declaration as to limitations, restrictions, and uses to which the Property may be put and specify that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property.

[If Required because Soil Exceeds Direct Contact Cleanup Levels] Section 1. Any activity on the Property that may interfere with the cleanup or integrity of the remedial action, result in the release or exposure to the environment of the residual contaminated soil that was contained or hazardous substance that remains on the Property as part of the remedial action, or creates a new exposure pathway is prohibited without prior written approval from Ecology. Exhibit A shows the areas of the Property where the upper 15 feet of soil contains hazardous substances in excess of applicable cleanup levels. Some examples of activities that are prohibited in the areas shown on Exhibit A include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork. This prohibition shall not apply to any utility, telecommunications or street maintenance activities in street right-of-ways contiguous to the Property.

[If Residual Groundwater Contamination] Section 2. No groundwater may be taken for any use from the Property except as consistent with the remedial action.

[If Permanent Heated Buildings With Closed Basements or First Floors and Residual Soil Vapor Contamination Indicates the Need for Engineering Controls] Section 3. No permanent, heated buildings with closed basements or first floors shall be constructed on the Property without first complying with the terms of Section 2.0 of the Sampling/Monitoring and Contingency Plan regarding design, installation and monitoring of vapor control systems.

[If Required by Ambient Air Direct Contact Contingency Plan] Section 4. Any activity on the Property that may interfere with the cleanup or integrity of the remedial action, result in the release or exposure to the environment of the residual contaminated soil or hazardous substance that remains on the Property as part of the remedial action, or creates a new exposure pathway is prohibited without prior written approval from Ecology. Exhibit B shows the areas of the Property where _____ engineering controls are present

Section 5. Any activity on the Property that may interfere with the continued protection of human health and the environment is prohibited.

Section 6. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation and maintenance of the remedial action. The Owner conveying any interest in the property shall notify Ecology of the name, mailing address and telephone number of the person or persons who acquired the title, easement, lease, or other interest in the Property within fifteen (15) days of the transaction. This Section 3 shall not apply to the conveyance of any interest among the City, MDA or SAM.

Section 7. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 8. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 9. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the remedial action, to take

samples, to inspect remedial actions conducted at the property, and to inspect records that are related to the remedial action.

Section 10. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

SEATTLE ART MUSEUM (SAM)

[DATE SIGNED]

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this ____ day of _____, 2001, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the person who signed as _____ of SAM, a Washington non-profit corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said non-profit corporation for the uses and purposes therein mentioned, and on oath stated that he/she was duly elected, qualified and action as said officer of the non-profit corporation, that he/she was authorized to execute said instrument and that the seal affixed, if any, is the non-profit corporate seal of said corporation.

Print Name: _____
 Notary Public in and for the State of Washington,
 Residing at _____
 My commission expires: _____

[DATE SIGNED]

On this ____ day of _____, 2001, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the person who signed as _____ of MDA, a Washington non-profit corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said non-profit corporation for the uses and purposes therein mentioned, and on oath stated that he/she was duly elected, qualified and action as said officer of the non-profit corporation, that he/she was authorized to execute said instrument and that the seal affixed, if any, is the non-profit corporate seal of said corporation.

Print Name: _____
 Notary Public in and for the State of Washington,
 Residing at _____
 My commission expires: _____

CITY OF SEATTLE (CITY)

[DATE SIGNED]

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this ____ day of _____, 2001, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the person who signed as _____ of the City, a Washington non-profit corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said non-profit corporation for the uses and purposes therein mentioned, and on oath stated that he/she was duly elected, qualified and action as said officer of the non-profit corporation, that he/she was authorized to execute said instrument and that the seal affixed, if any, is the non-profit corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and official seal the day and year first above written.

Print Name: _____
 Notary Public in and for the State of Washington,
 Residing at _____
 My commission expires: _____

EXHIBIT F
SAMPLING/MONITORING AND CONTINGENCY PLAN
10 BROAD STREET
SEATTLE, WASHINGTON

CONTENTS	<u>Page</u>
1.0 AMBIENT AIR SAMPLING PROGRAM	1
2.0 INDOOR AIR MONITORING PROGRAM	2
3.0 GROUNDWATER MONITORING	3
4.0 CONTINGENCY PLAN	4
<i>4.1 Soil to Groundwater Pathway</i>	4
<i>4.2 Ambient Air</i>	5
<i>4.3 Indoor Air</i>	5
<i>4.4 Groundwater</i>	6
TABLE	
1 Analyte List for Ambient Air Monitoring	8
FIGURES	
1 Ambient Air Monitoring Location Plan	
2 Groundwater Monitoring Well Location Plan	
3 Optional Vapor Removal System for Subgrade Structure	

EXHIBIT F
SAMPLING/MONITORING AND CONTINGENCY PLAN
10 BROAD STREET
SEATTLE, WASHINGTON

This exhibit describes the air and groundwater monitoring program and contingency plan that may be implemented on the 10 Broad Street property in Seattle, Washington. Exhibit F was prepared on behalf of the City of Seattle (City), the Museum Development Authority (MDA), and the Seattle Art Museum (SAM). The City, MDA, and SAM intend to enter into a Prospective Purchaser Consent Decree with the Washington State Department of Ecology (Ecology) pursuant to the MTCA, RCW 70.105D.040(5).

The selected cleanup action includes excavating and disposing of petroleum-contaminated soils to the extent practicable. After the excavation is completed, compliance monitoring will be performed to evaluate the effectiveness of the remedial action. The following sections outline the potential scopes of work for groundwater and air monitoring that will be performed at the site, as well as contingency remedial actions that may be implemented if cleanup levels are not met.

1.0 AMBIENT AIR SAMPLING PROGRAM

The excavation cleanup action will remove most of the mass of hydrocarbons present on the 10 Broad Street site. To verify that vapor emissions from residual petroleum-containing soils will not significantly impact ambient air, we propose to perform two rounds of ambient air monitoring during reasonable "worst case" conditions. Vapor emissions of volatile organic compounds (VOCs) are impacted by weather conditions as follows:

- ▶ Higher temperature increases volatilization of VOCs from soil and groundwater;
- ▶ Lower barometric pressure increases vapor migration;
- ▶ Lower moisture content in soil increases the air-filled porosity and diffusion of VOCs; and
- ▶ Lower wind speed reduces dispersion in ambient air.

The first round of sampling will be performed under warm weather conditions during the 2002 summer season. Sampling will be conducted on warm dry days

exhibiting low wind speeds. The second round of sampling will be performed in the Fall of 2002 before heavy rains decrease the air-filled porosity in site soils. Sampling will be collected on a day where wind speeds are minimal and a low pressure system is present.

Two 8-hour composite air samples will be collected using SUMMA canisters. Proposed sampling locations are shown on Figure 1. One upwind and two urban background 8-hour composite air samples will also be collected to establish area background conditions. Potential urban background sampling locations include the downtown Seattle Art Museum location, the Westlake Center, or the Seattle Center.

Samples will be submitted for analysis of petroleum hydrocarbons using EPA Method TO-14A. The analyte list is presented in Table 1.

Compliance with the ambient air remedial action objective will be determined as follows:

- ▶ Site ambient air concentrations must meet MTCA Method B cleanup levels;
or
- ▶ Site ambient air concentrations must be below or equal to area background concentrations.

Results of these monitoring events will be summarized in a technical memorandum including recommendations regarding the need for additional air monitoring or remedial actions. If ambient air concentrations exceed both the Method B and area background criteria, additional monitoring and/or remedial actions and long-term monitoring will be implemented in the affected areas as discussed in the Contingency Plan section. If results indicate that the soil to ambient air pathway does not appear to be of concern, no additional ambient air monitoring will be performed.

It is important that any decisions regarding the need for remedial actions be made prior to site development. Within 30 days of receipt, Ecology will review the technical memorandum and will issue a written determination as to whether contingency remedial actions are necessary to address ambient air.

2.0 INDOOR AIR MONITORING PROGRAM

There are no plans for permanent heated buildings with closed basements or first floors at the site. If plans for such a building are added, soil vapor

investigations will be performed along the proposed footprint of the building to determine if engineering controls are needed to address hydrocarbon vapor emissions from potential on-site or off-site sources. As part of the geotechnical exploration program, additional characterization of the subsurface soil vapors will be performed to determine the need for a vapor control system. Within 90 days after the building location is selected and design is finalized, an indoor air sampling and analysis plan will be submitted to Ecology for its review and approval. The sampling and analysis plan will be finalized within 30 days after receiving final Ecology comments and approval letter. Sampling will be conducted in accordance with the schedule included in the Ecology-approved plan.

If field soil headspace screening results indicate the presence of organic vapors at concentrations exceeding background conditions, engineering controls will be added or additional vapor monitoring will be performed to determine if petroleum vapor concentrations exceed MTCA Method B indoor air cleanup criteria. If petroleum hydrocarbon vapor concentrations exceed Method B indoor air criteria, engineering controls will be incorporated in the building design. An indoor air impact assessment report summarizing the results of the sampling program will be submitted to Ecology for review and approval within 90 days after completing the sampling program.

Within 30 days of receipt, Ecology will review the indoor air impact assessment report and will issue a written determination as to whether contingency remedial actions are necessary to address indoor air. If contingency remedial actions are deemed necessary, SAM, the City and the MDA will issue an indoor air engineering control design report for Ecology review (as discussed in **Section 4.0 Contingency Plan**).

3.0 GROUNDWATER MONITORING

Groundwater monitoring will be conducted quarterly at the following monitoring wells following completion of the excavation cleanup action:

- ▶ **MW-5.** This well is in the upgradient direction of the affected area and will be used to monitor groundwater entering the site (Figure 2).
- ▶ **MW-7 and MW-42.** These wells are located on site and will be used to monitor groundwater quality near the downgradient property boundary.

Groundwater samples will be collected from each well every three months using low-flow sampling techniques until compliance with cleanup levels has

been demonstrated. Samples will be analyzed for gasoline-range hydrocarbons by Method NWTPH-G, diesel- and oil-range hydrocarbons by NWTPH-D extended, and BTEX compounds by EPA Method 8260.

A technical memorandum will be prepared that summarizes the results of this groundwater monitoring program and provides recommendations regarding the need for additional groundwater monitoring or contingency remedial actions. Compliance with surface water cleanup criteria for the site will be considered attained when groundwater quality monitoring results are below cleanup levels for four consecutive quarters. If compliance with surface water cleanup levels has not been achieved in the on-site wells, conditional points of compliance will be evaluated as discussed in **Section 4.0 Contingency Plan**. If sample results are in compliance with surface water criteria, no additional remedial actions will be proposed for addressing the groundwater pathway.

Within 30 days of receipt, Ecology will review the technical memorandum and will issue a written determination as to whether additional groundwater monitoring and/or institutional controls will be necessary to address the groundwater pathway.

4.0 CONTINGENCY PLAN

This section describes actions that may be taken under different scenarios when compliance with cleanup levels is not achieved for soil to groundwater, ambient air, indoor air, or groundwater pathways.

4.1 Soil to Groundwater Pathway

Confirmation that soil concentrations are protective of the soil to groundwater pathway will initially be based on compliance with groundwater cleanup levels as measured in site monitoring wells. If confirmation groundwater monitoring results are in compliance with groundwater cleanup levels applied to the site for four consecutive quarters, site soil quality will be considered adequately protective of the soil to groundwater pathway.

If hydrocarbon concentrations exceed surface water criteria in site compliance wells (including wells MW-7, and MW-42), institutional controls will be placed on the site restricting the use of groundwater, the downgradient boundary will become the conditional point of compliance, and additional groundwater monitoring will be performed as discussed in Section 4.4. In the event that groundwater monitoring results indicate that contaminated groundwater exceeding surface water criteria is migrating off property and threatening the

adjacent marine surface water body (Elliott Bay), and Ecology issues a written determination that contingency remedial actions are necessary, SAM, the City and the MDA will issue a draft focused remedial design memorandum for Ecology review. The memorandum will be prepared within 90 days of receiving Ecology's written contingency determination and will describe a proposed remedial alternative.

4.2 Ambient Air

If site ambient air results are not in compliance with Method B and area background criteria, additional monitoring, targeted vapor extraction, or engineering controls such as capping will be implemented with long-term monitoring as appropriate. A draft focused remedial design and long-term air monitoring memorandum will be prepared within 60 days of receiving Ecology's written determination that contingency remedial actions are necessary to address the ambient air pathway. Ecology will endeavor to review and comment on the ambient air remedial design memorandum within 45 days of receipt. Within 60 days after receiving final Ecology comments and approval letter, the ambient air remedial design memorandum will be finalized.

4.3 Indoor Air

As mentioned previously, there are no plans to install permanent heated buildings on the site. However, if a building is proposed for the site and soil vapor monitoring results indicate that contingency remedial actions are necessary to address indoor air quality, a draft indoor air engineering control design report will be submitted for Ecology review. Ecology will endeavor to review and comment on the engineering control design report within 45 days of receipt. Within 60 days after receiving final Ecology comments and approval letter, the engineering control design report will be finalized. The approved engineering controls will be implemented at time of building construction.

Engineering controls will be incorporated in the building design, and may include design features such as a garage open to the outdoors, a heating and air conditioning system which pressurizes the building instead of creating a vacuum, the placement of a geomembrane under the slab acting as a vapor barrier, or the installation of a vapor collection and extraction system under the slab. Figure 3 depicts a conceptual vapor removal system, consisting of perforated pipes to be installed in a grid pattern with a vacuum pump system to remove collecting vapors. Depending on the concentration of hydrocarbon present, the vapors may be treated before being released to the atmosphere. Water entering the system drainage layer will move by gravity feed to the storm sewer

system. Vapors would reside at the top of the piping and will be removed by the vacuum pump.

An indoor air compliance monitoring plan will be developed and submitted for Ecology review within 60 days after the engineering control design is approved. Ecology will endeavor to review and comment on the draft monitoring plan within 30 days. Within 30 days after receiving final Ecology comments and approval letter, the indoor air compliance monitoring plan will be finalized. The Ecology-approved plan will include a schedule for conducting the indoor air compliance monitoring.

4.4 Groundwater

The determination of adequate groundwater treatment will be based on the remedial actions' ability to comply with groundwater (surface water) cleanup levels established for the site. The excavation cleanup action is intended to address soil to groundwater and groundwater to surface water pathways. This technology should provide adequate treatment for site groundwater.

Compliance groundwater monitoring will be performed following completion of excavation activities to ensure the long-term effectiveness of the remedial action to protect human health and the environment. Wells MW-5, MW-7, and MW-42 will be sampled on a quarterly basis. Compliance with surface water cleanup criteria for the site will be considered attained when groundwater quality monitoring results are below cleanup levels for four consecutive quarters.

Upon demonstrating that groundwater quality at the site wells meets surface water criteria, the monitoring wells will be abandoned in accordance with Ecology regulations.

In the event that after implementing the excavation remedial action and four quarters of confirmation monitoring, hydrocarbon concentrations exceed surface water criteria in site compliance wells (including wells MW-7, and MW-42), a restrictive covenant (institutional controls) will be placed on the site groundwater restricting its use subject to natural attenuation. Under this scenario, conditional points of compliance will be established along the downgradient property boundary and the following actions may be performed:

- ▶ Additional monitoring wells together with computer modeling may be used to demonstrate that contaminated groundwater is not impacting the adjacent marine surface water body (Elliott Bay);

- ▶ Computer modeling and monitoring of natural attenuation processes may be used to show that natural attenuation will reduce hydrocarbon concentrations in site groundwater over time; and
- ▶ Additional wells, computer modeling, and monitoring of natural attenuation processes may be used to show that compliance with surface water criteria can be achieved within a reasonable time period without performing additional active cleanup.

SAM, the City, and the MDA shall submit a supplemental natural attenuation groundwater monitoring plan which may include proposed locations for additional wells and guidelines for computer modeling within 60 days of receiving Ecology's written determination that additional natural attenuation groundwater monitoring is necessary to address potential surface water impacts. Natural attenuation monitoring will be performed in general accordance with EPA's guidelines for the monitoring of natural attenuation. The monitoring program will also evaluate whether enhancement of the natural attenuation process (e.g. addition of nutrients) is necessary to achieve surface water standards in a timely manner.

Ecology will endeavor to review and comment on the supplemental groundwater monitoring plan within 30 days of receipt. Within 45 days after receiving final Ecology comments and approval letter, the supplemental groundwater monitoring plan will be finalized.

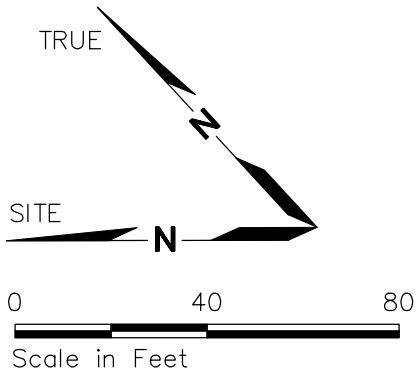
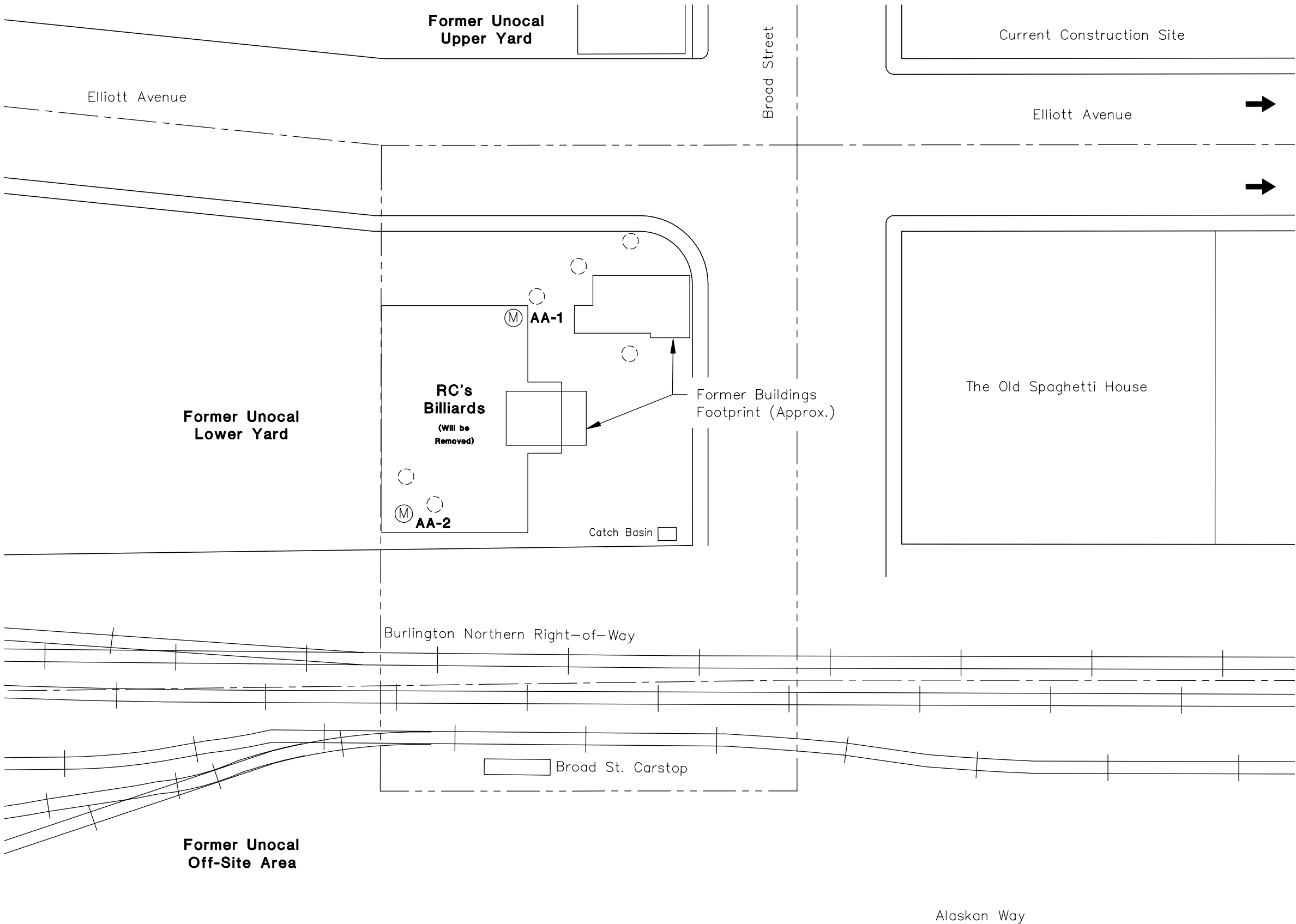
In the event that natural attenuation fails to mitigate groundwater quality after a reasonable time frame established from the monitoring, modeling, and natural attenuation processes evaluation described above, SAM, the City, and the MDA shall propose an alternative active remedial action plan for groundwater to protect human health and the environment.

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Table 1 - Analyte List for Ambient Air Monitoring

Compound	Detection Limit Goals in ppbv
Benzene	0.50
Toluene	0.50
Ethylbenzene	0.50
m,p-Xylene	0.50
o-Xylene	0.50
1,3,5-Trimethylbenzene	0.50
1,2,4-Trimethylbenzene	0.50
Propylene	2.0
1,3-Butadiene	2.0
Hexane	2.0
Cyclohexane	2.0
4-Ethyltoluene	2.0
Heptane	2.0
Napththalene	50
C3 to C5 Aliphatic Hydrocarbons	10
C5 to C6 Aliphatic Hydrocarbons	10
C6 to C8 Aliphatic Hydrocarbons	10
C8 to C10 Aliphatic Hydrocarbons	10
C10 to C12 Aliphatic Hydrocarbons	10
C12+ Aliphatic Hydrocarbons	10
C6 to C8 Aromatic Hydrocarbons	10
C8 to C10 Aromatic Hydrocarbons	10
C10 to C12 Aromatic Hydrocarbons	10
C12+ Aromatic Hydrocarbons	10

Ambient Air Monitoring Location Plan



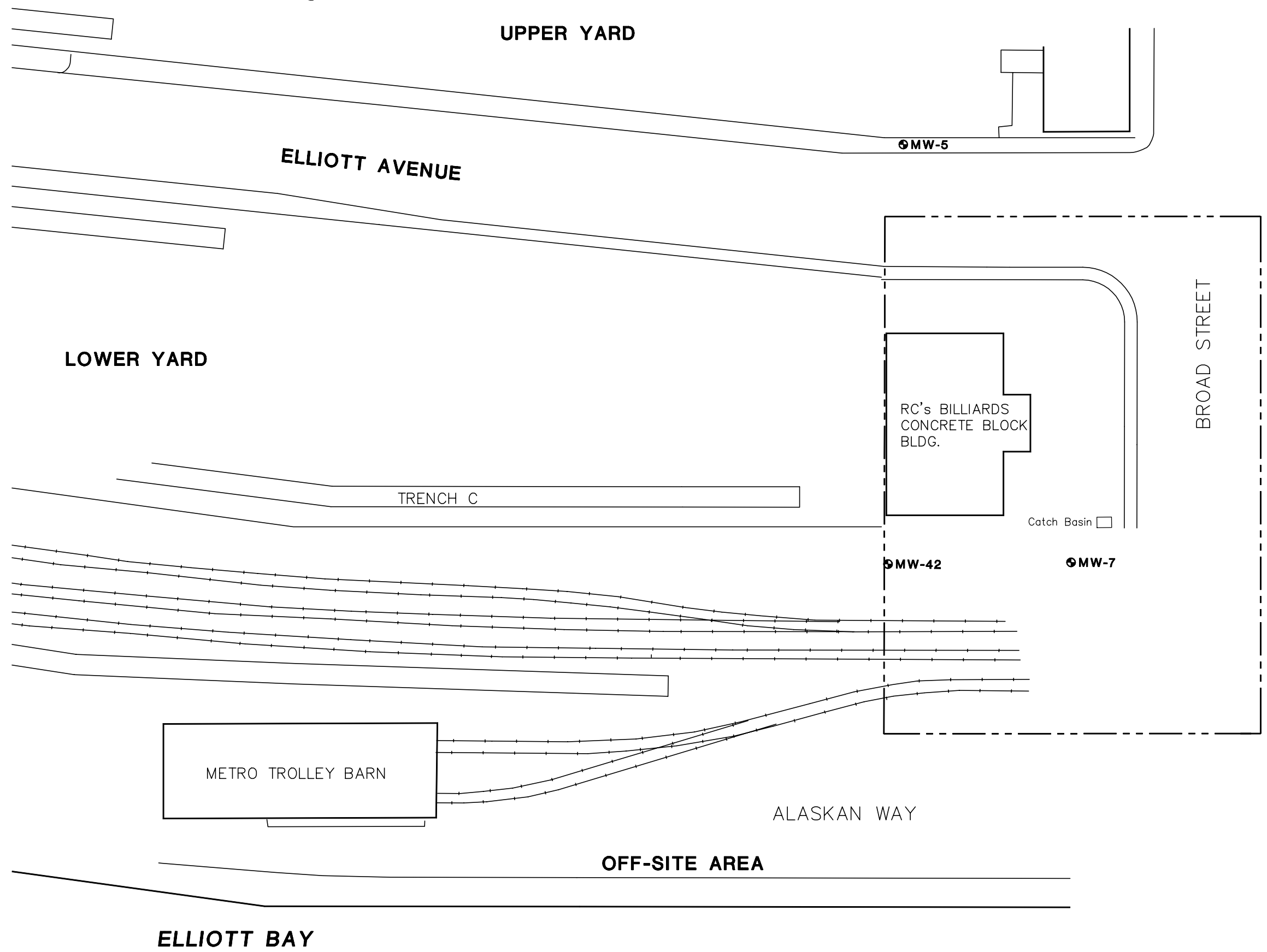
Proposed Ambient Air Monitoring Location and Number

- Ⓜ **AA-1** Ambient Air Sample
- Approximate Former Tank Location

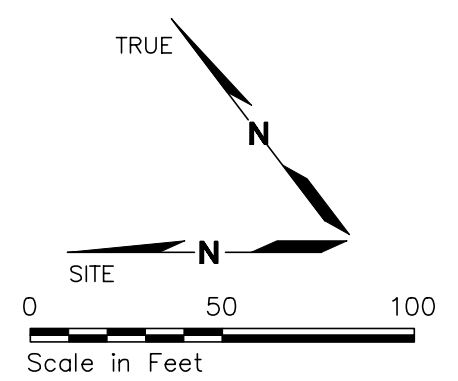
--- Approximate Property Boundary

Note: One background sample will be collected in the upgradient direction of the site. Two background samples will be collected elsewhere in downtown Seattle.

Groundwater Monitoring Well Location Plan

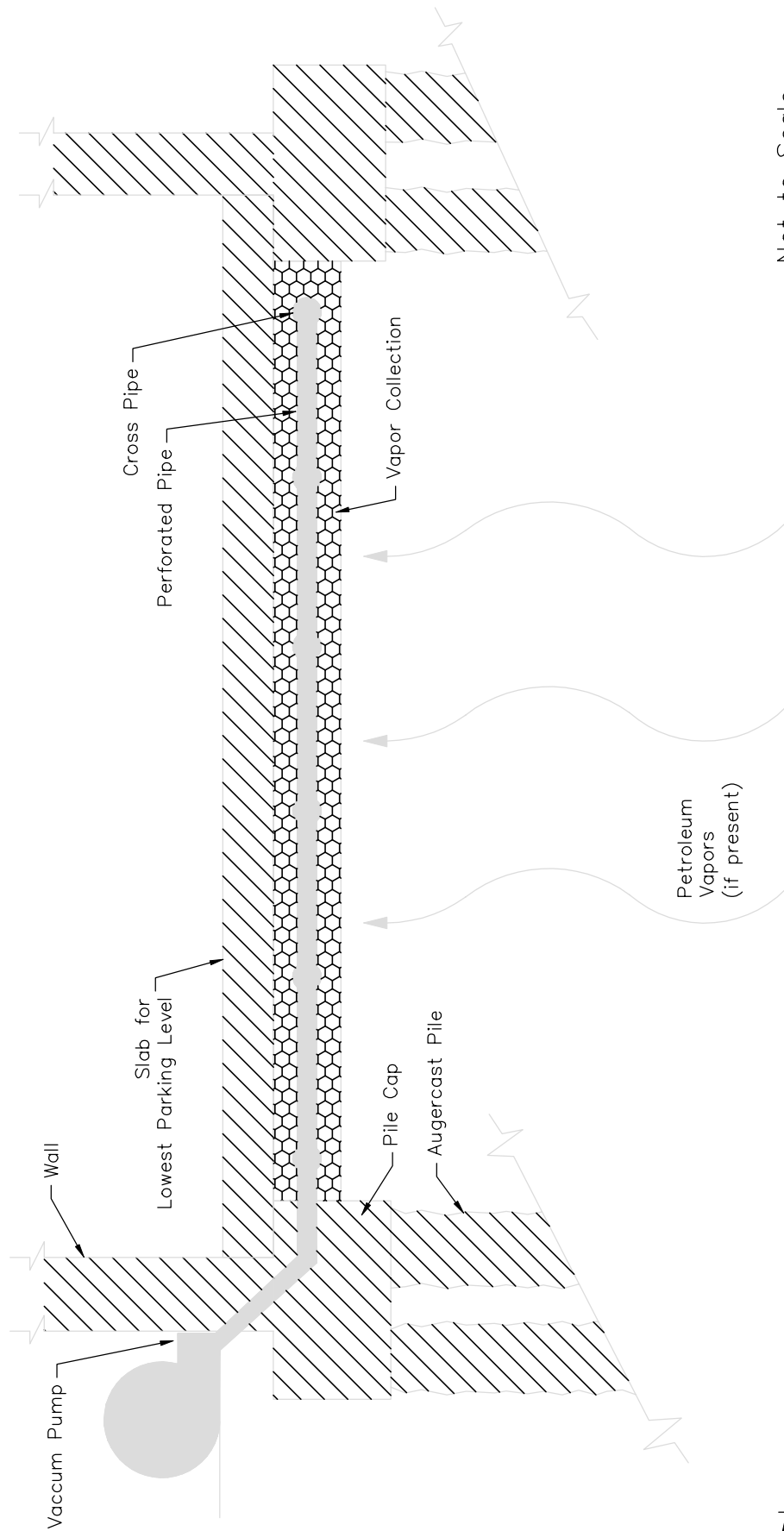


- **GS-1** Groundwater Grab Sample Location and Number
- ⊕ **MW-7** Monitoring Well Location and Number
- Approximate Property Boundary



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Optional Vapor Removal System for Subgrade Structure



Not to Scale